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(54) **Framework foldable as stepladder or chair**

(57) A detachable ladder is disclosed that includes a lower frame (10) including two substantially trapezoidal legs (11), a first board (13) interconnecting tops of the legs (11), and one or more crosspieces (14) interconnecting the legs (11); and an upper frame (20) including two side units (21) each including a substantially trapezoidal upper element having its forward end pivotably secured to a top front end of the leg (11) and a lower support extended downward from the upper element, a second board (23) interconnecting bottoms of the upper elements, a third board (24) interconnecting tops of the upper elements, and one or more fourth boards interconnecting intermediate portions of the upper elements. Pivoting the upper frame (20) about the lower frame (10) until the tops of the upper elements rest upon a supporting ground will convert the ladder into a chair.

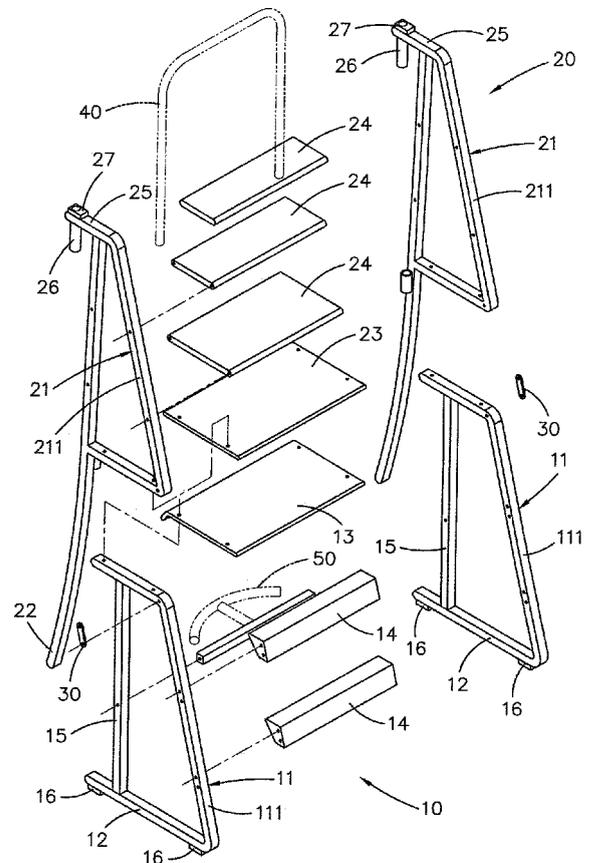


FIG. 1

Description

BACKGROUND OF THE INVENTION

Field of Invention

[0001] The present invention relates to ladders and more particularly to a framework which can be either folded as a stepladder or a chair or detached and stored in an enclosure or bag for decreasing a storage space.

Related Art

[0002] Conventionally, all ladders have a fixed length except extension ladders. As such, such ladders are not suitable for carrying by, for example, an automobile. Further, no documents about assembling a detachable stepladder as a chair so far as the present inventor is aware. Thus, continuing improvements in the exploitation of detachable stepladder are constantly being sought.

SUMMARY OF THE INVENTION

[0003] It is therefore an object of the present invention to provide a detachable ladder comprising a lower frame including two substantially trapezoidal legs, a first board interconnected tops of the legs, and one or more crosspieces interconnected the legs; and an upper frame including two side units each including a substantially trapezoidal upper element having its forward end pivotably secured to a top front end of the leg, and a lower support extended downward from the upper element, a second board interconnected bottoms of the upper elements, a third board interconnected tops of the upper elements, and one or more fourth boards interconnected intermediate portions of the upper elements; whereby pivoting the upper frame about the lower frame until the tops of the upper elements rest upon a supporting ground will convert the ladder into a chair.

[0004] In a first aspect of the present invention there is further provided an anti-slip shoe formed on each of the tops of the upper elements and front and rear ends of a bottom of each leg.

[0005] In a second aspect of the present invention there is further provided a receptacle vertically extended from the anti-slip shoe on the top of each upper element.

[0006] In a third aspect of the present invention there is further provided a U-shaped bar adapted to have portions of its both ends inserted into the receptacles.

[0007] In a fourth aspect of the present invention there is further provided a footrest interconnected the legs and opposing the one or more crosspieces.

[0008] In a fifth aspect of the present invention each of the side unit further comprises a substantially inverted T-shaped member secured to the bottom of the upper element and the support such that the substantially inverted T-shaped members are adapted to form as armrests in response to forming the chair.

[0009] In a sixth aspect of the present invention there is further provided a pad having its front end pivotably secured to a rear end of the first board such that the pad is adapted to rest on the first and second boards as a seat by pivoting in response to forming the chair.

[0010] In a seventh aspect of the present invention there is further provided a pad having its rear end pivotably secured to a joining point of the upper element and the support such that the pad is adapted to rest on the first and second boards as a seat by pivoting in response to forming the chair.

[0011] The above and other objects, features and advantages of the present invention will become apparent from the following detailed description taken with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012]

FIG. 1 is an exploded perspective view of a preferred embodiment of detachable framework according to the invention;

FIG. 2 is a perspective view of the framework assembled as a stepladder;

FIG. 3 is a side elevation depicting a folding of the stepladder in FIG. 2 to a chair shown in phantom;

FIG. 4 is a perspective view of the chair in FIG. 3;

FIG. 5 is a side elevation depicting a folding of the stepladder in FIG. 2 to a chair shown in phantom;

FIG. 6 is a side elevation of the chair in FIG. 5 with both backrest and armrest removed and a seat added in a first configuration;

FIG. 7 is a view similar to FIG. 6 showing a second configuration thereof; and

FIG. 8 is a perspective view of the detached stepladder stored in an enclosure.

DETAILED DESCRIPTION OF THE INVENTION

[0013] Referring to FIGS. 1 and 2, a detachable framework in accordance with a preferred embodiment of the invention comprises a lower frame 10 including two substantially trapezoidal leg units 11 each including an inclined bar 111, a bottom bar 12, two first anti-slip shoes 16 on a bottom of the bottom bar 12, and a post 15 interconnected a top portion of the inclined bar 111 and the bottom bar 12 in which a plurality of through holes are formed in the bars 111 and 12 and the post 15 by drilling; a rectangular first board 13, and two crosspieces 14 in which a plurality of through holes are formed in the bars 111 and 12, the post 15, the first board 13, and the crosspieces 14 by drilling such that the first board 13 can be fastened on tops of the leg units 11, and the crosspieces 14 can be fastened between the inclined bars 111 by fasteners as known in the art.

[0014] The framework further comprises a foot rest 50 interconnected the posts 15; and an upper frame 20 in-

cluding two side units 21 each including an inclined bar 211, a top bar 25 formed with the inclined bar 211, a second anti-slip shoe 27 on an end of the top bar 25, a receptacle 26 vertically extended from the second anti-slip shoe 27, and a slightly arcuate bar 22 having its top formed with the top bar 25 and an extension interconnected its intermediate point and a bottom end of the inclined bar 211; a rectangular second board 23, and a plurality of rectangular third boards 24 in which a plurality of through holes are formed in the side units 21 and the boards 23 and 24 by drilling such that the second board 23 can be fastened on the first board 13 under the extensions of the arcuate bars 22, and the third boards 24 can be fastened between the inclined bars 211 and the arcuate bars 22 by fasteners as known in the art.

[0015] The framework further comprises two links 30 each having both ends pivotably secured to a top of the inclined bar 111 and a bottom of the inclined bar 211. A U-shaped frame element 40 has its both ends into the receptacles 26 as a guard. A stepladder is formed as shown in FIG. 2.

[0016] Referring to FIGS. 3 and 4, an operation of folding the stepladder into a chair will be described in detailed below. First, remove the U-shaped frame element 40. Next, pivot the upper frame 20 about the links 30 about 180 degrees until the second anti-slip shoes 27 rest upon a supporting ground (i.e., from the position indicated by arrow P1 to the position indicated by arrow P2). A cloth put on the engaged U-shaped frame element 40 and a portion of the arcuate bars 211 is served as a backrest of the formed chair.

[0017] Referring to FIG. 5, two armrests 28 are formed with the chair by two frame elements attached to both sides of the stepladder after the pivotal operation described in FIGS. 3 and 4.

[0018] Referring to FIG. 6 in conjunction with FIG. 4, a first configuration of mounting a pad as a seat of the chair formed in FIG. 4 is illustrated. As shown, a rectangular pad 80 dimensioned to the size of the combined the first board 13 and the second board 23 is provided. The pad 80 has one end pivotably secured to two front corners of the first board 13 and comprises two projections 81 at its two corners distal the pivots thereof. Also, two holes 29 are formed on two rear corners of the second board 23. The holes 29 are adapted to snugly receive the projections 81 after pivoting the pad 80 about 270 degrees about the pivots thereof. At this position, the pad 80 is served as a seat.

[0019] Referring to FIG. 7 in conjunction with FIG. 4, a second configuration of mounting a pad as a seat of the chair formed in FIG. 4 is illustrated. As shown, a rectangular pad 80 dimensioned to the size of the combined the first board 13 and the second board 23 is provided. The pad 80 has one end pivotably secured to two rear corners of the second board 23 and comprises two projections 81 at its two corners distal the pivots thereof. Also, two holes 17 are formed on two front corners of the first board 13. The holes 17 are adapted to snugly receive

the projections 81 after pivoting the pad 80 about 90 degrees about the pivots thereof. At this position, the pad 80 is served as a seat.

[0020] Referring to FIG. 8, the stepladder or chair may be detached and stored in an enclosure 90 or a bag for saving occupying space when the stepladder or chair is expected to be of no use for a relatively long period of time or for transport.

[0021] While the invention herein disclosed has been described by means of specific embodiments, numerous modifications and variations could be made thereto by those skilled in the art without departing from the scope and spirit of the invention set forth in the claims.

Claims

1. A detachable ladder comprising:

a lower frame including two substantially trapezoidal legs, a first board interconnected tops of the legs, and one or more crosspieces interconnected the legs; and

an upper frame including two side units each including a substantially trapezoidal upper element having its forward end pivotably secured to a top front end of the leg, and a lower support extended downward from the upper element, a second board interconnected bottoms of the upper elements, a third board interconnected tops of the upper elements, and one or more fourth boards interconnected intermediate portions of the upper elements;

whereby pivoting the upper frame about the lower frame until the tops of the upper elements rest upon a supporting ground will convert the ladder into a chair.

2. The detachable ladder of claim 1, further comprising an anti-slip shoe formed on each of the tops of the upper elements and front and rear ends of a bottom of each leg.

3. The detachable ladder of claim 2, wherein the upper element further comprises a receptacle vertically extended from the anti-slip shoe on the top thereof.

4. The detachable ladder of claim 3, further comprising a U-shaped bar adapted to have portions of its both ends inserted into the receptacles.

5. The detachable ladder of claim 1, further comprising a footrest interconnected the legs and opposing the one or more crosspieces.

6. The detachable ladder of claim 1, wherein each of the side unit further comprises a substantially invert-

ed T-shaped member secured to the bottom of the upper element and the support such that the substantially inverted T-shaped members are adapted to form as armrests in response to forming the chair.

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- 7. The detachable ladder of claim 1, further comprising a pad having its front end pivotably secured to a rear end of the first board such that the pad is adapted to rest on the first and second boards as a seat by pivoting in response to forming the chair.

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- 8. The detachable ladder of claim 1, further comprising a pad having its rear end pivotably secured to a joining point of the upper element and the support such that the pad is adapted to rest on the first and second boards as a seat by pivoting in response to forming the chair.

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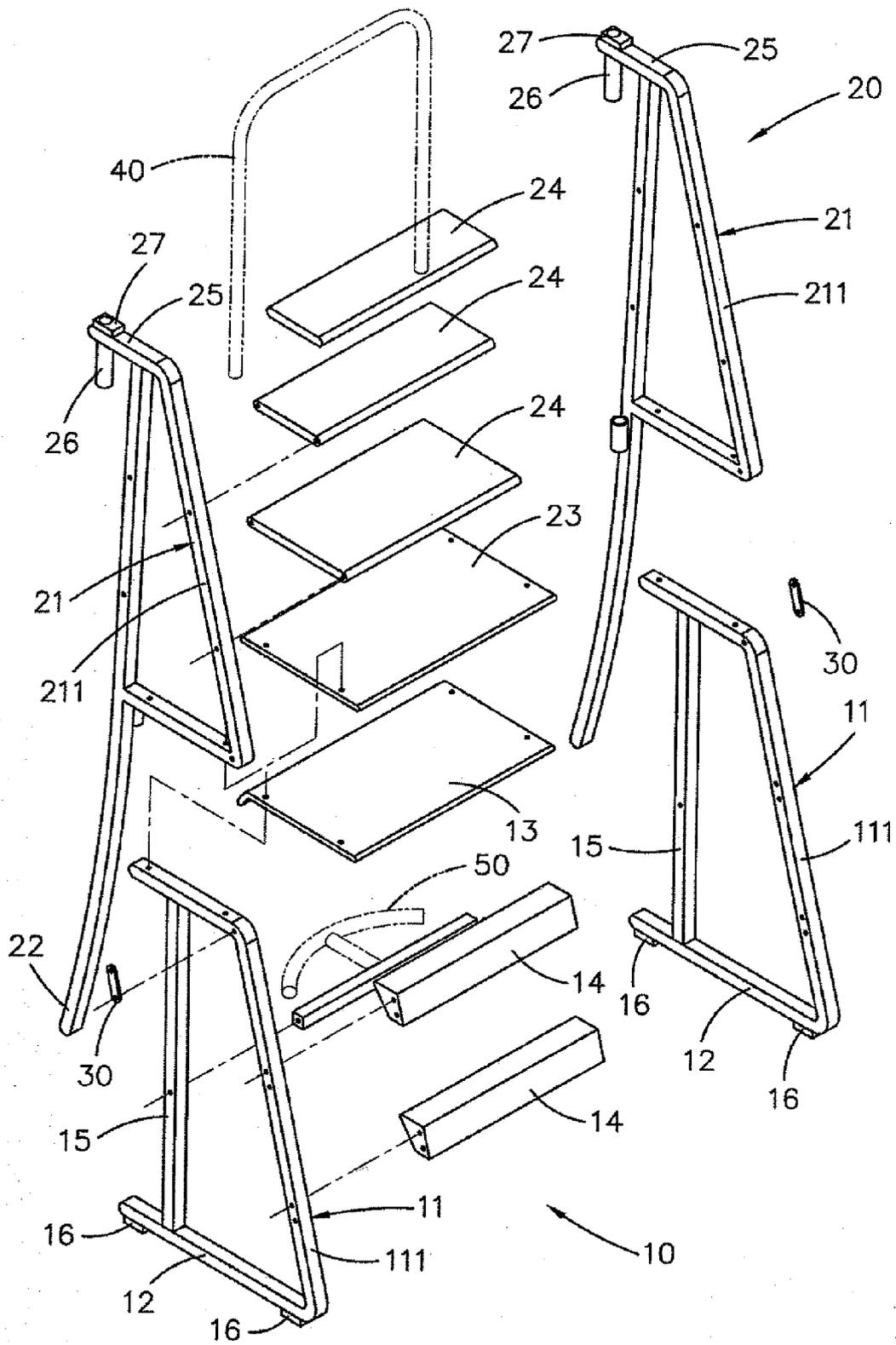


FIG. 1

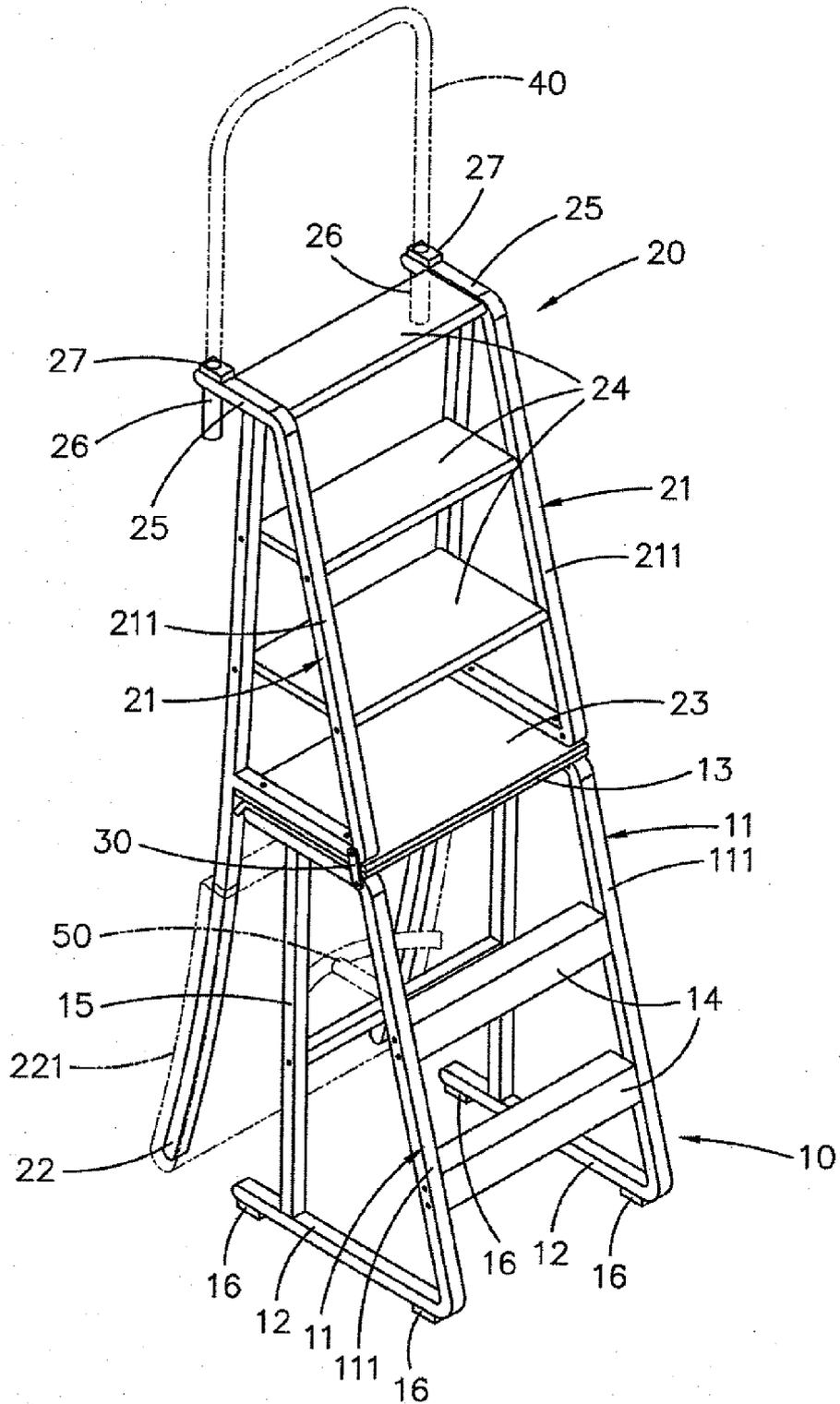


FIG. 2

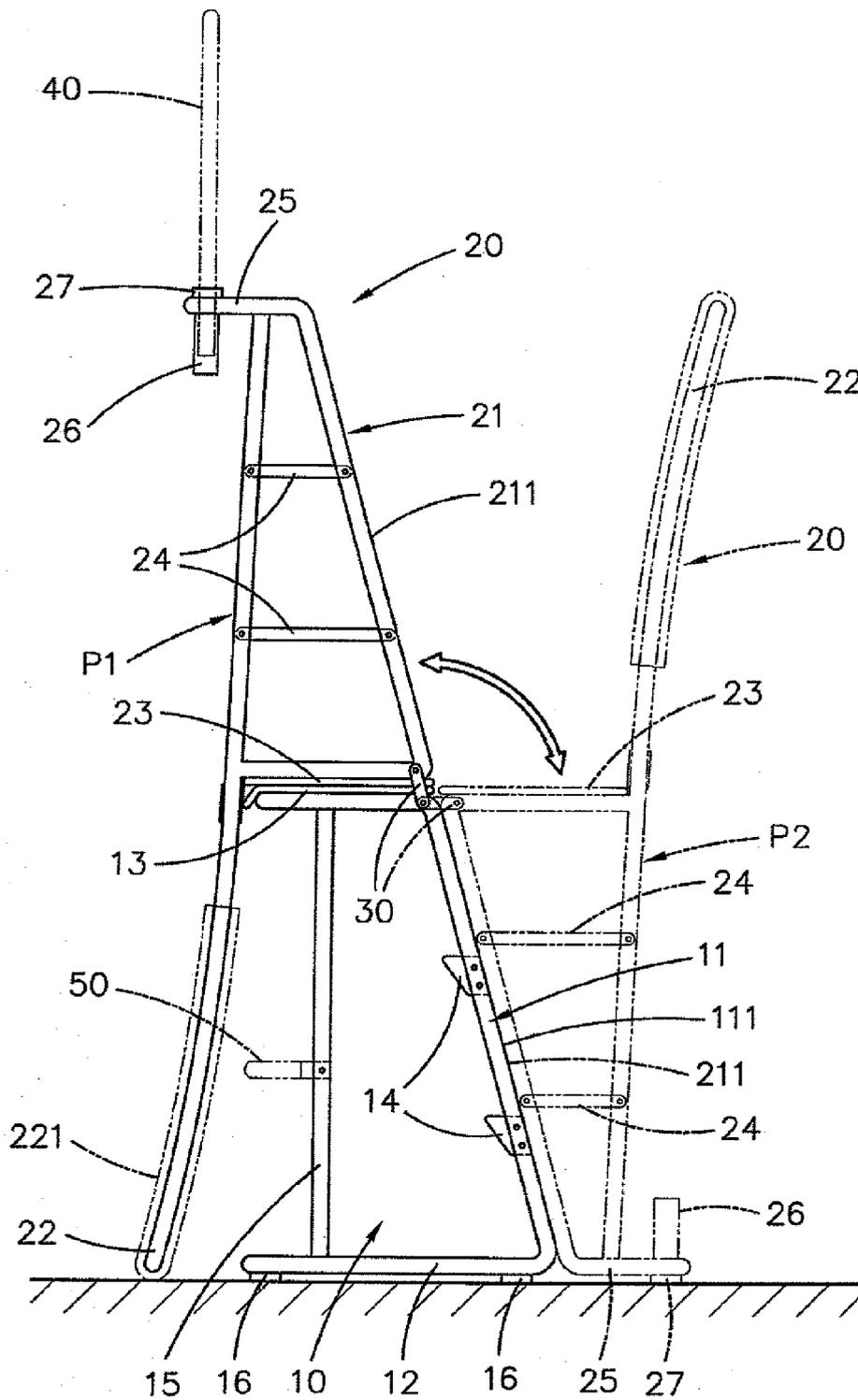


FIG. 3

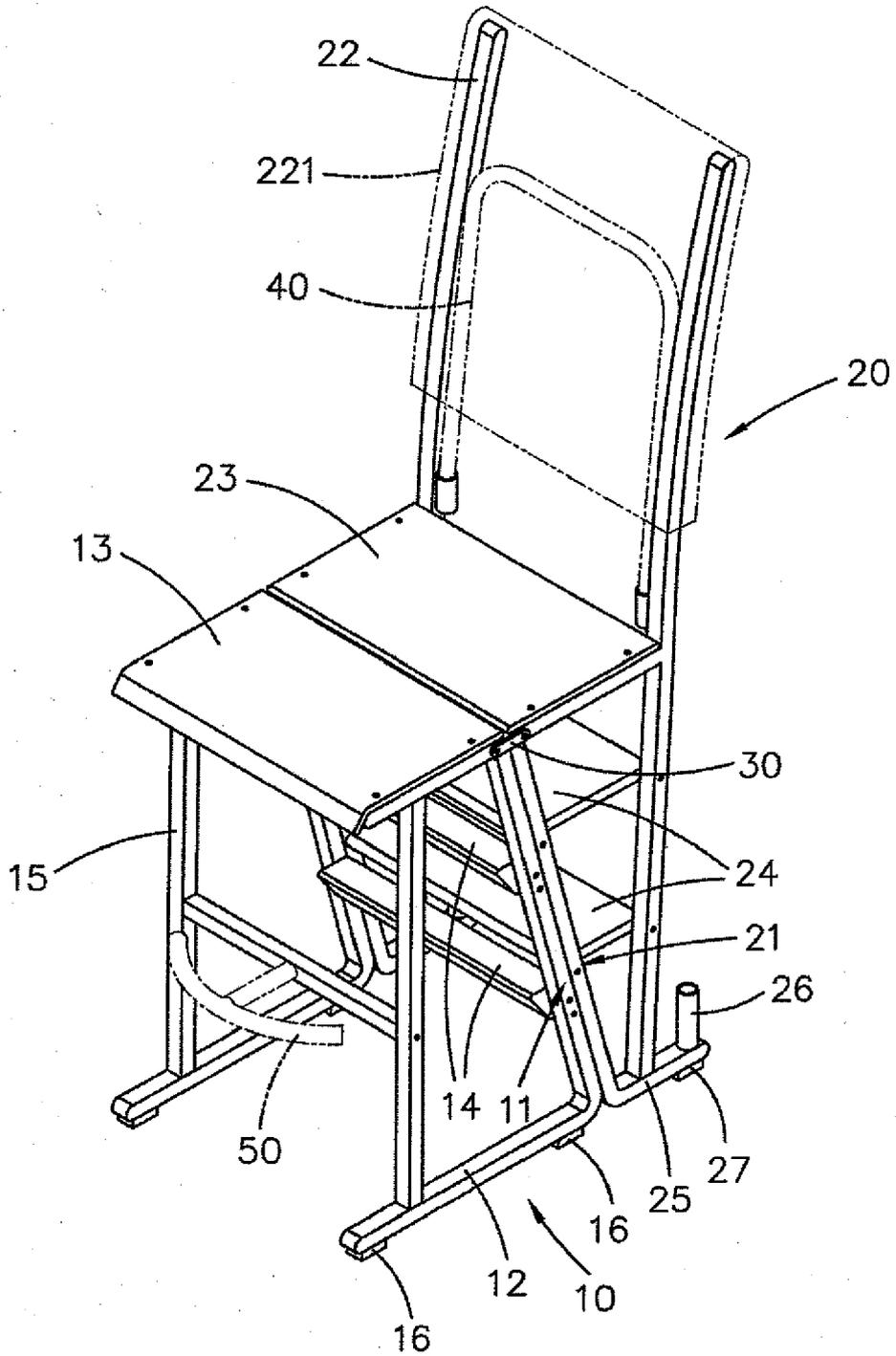


FIG. 4

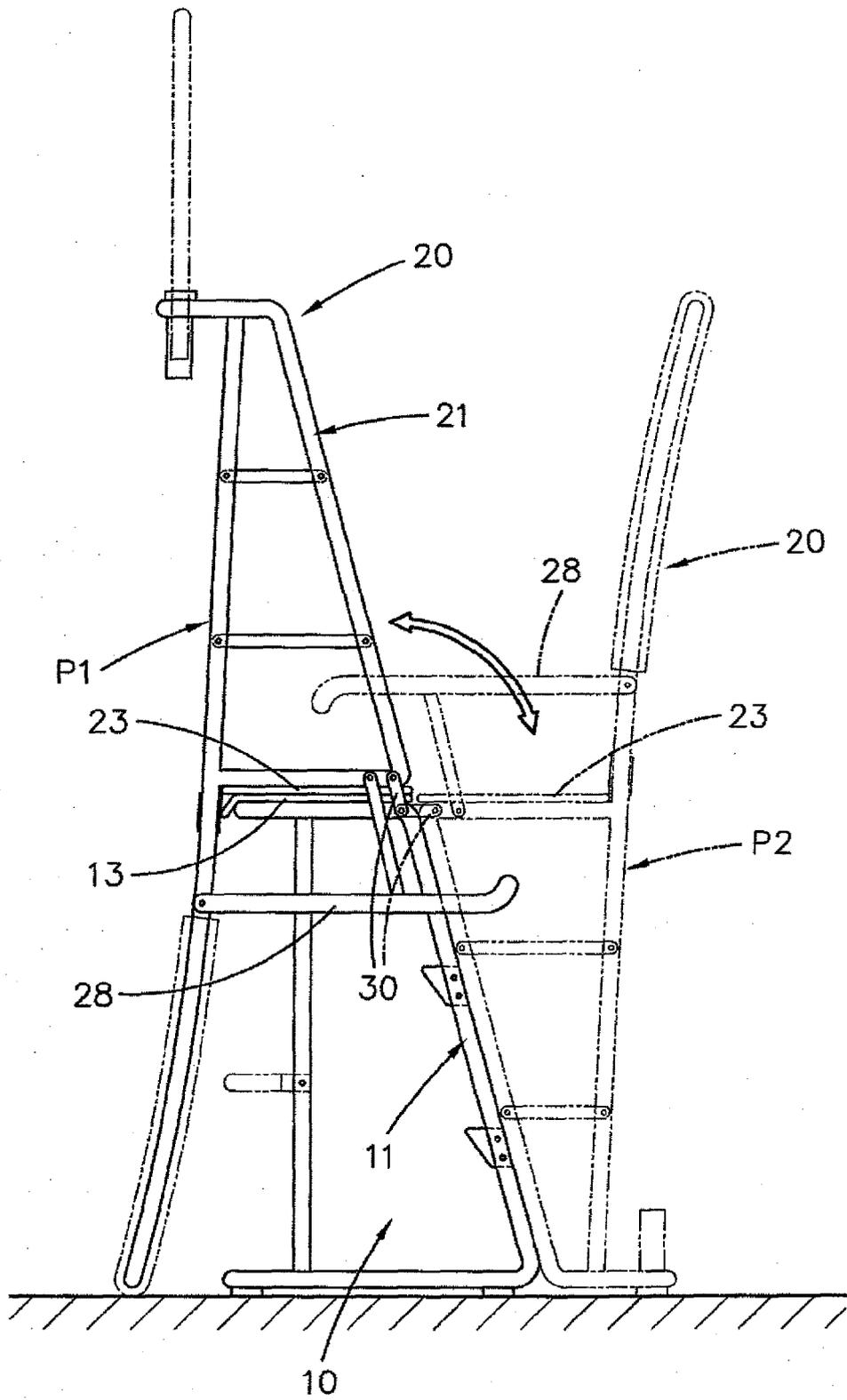


FIG. 5

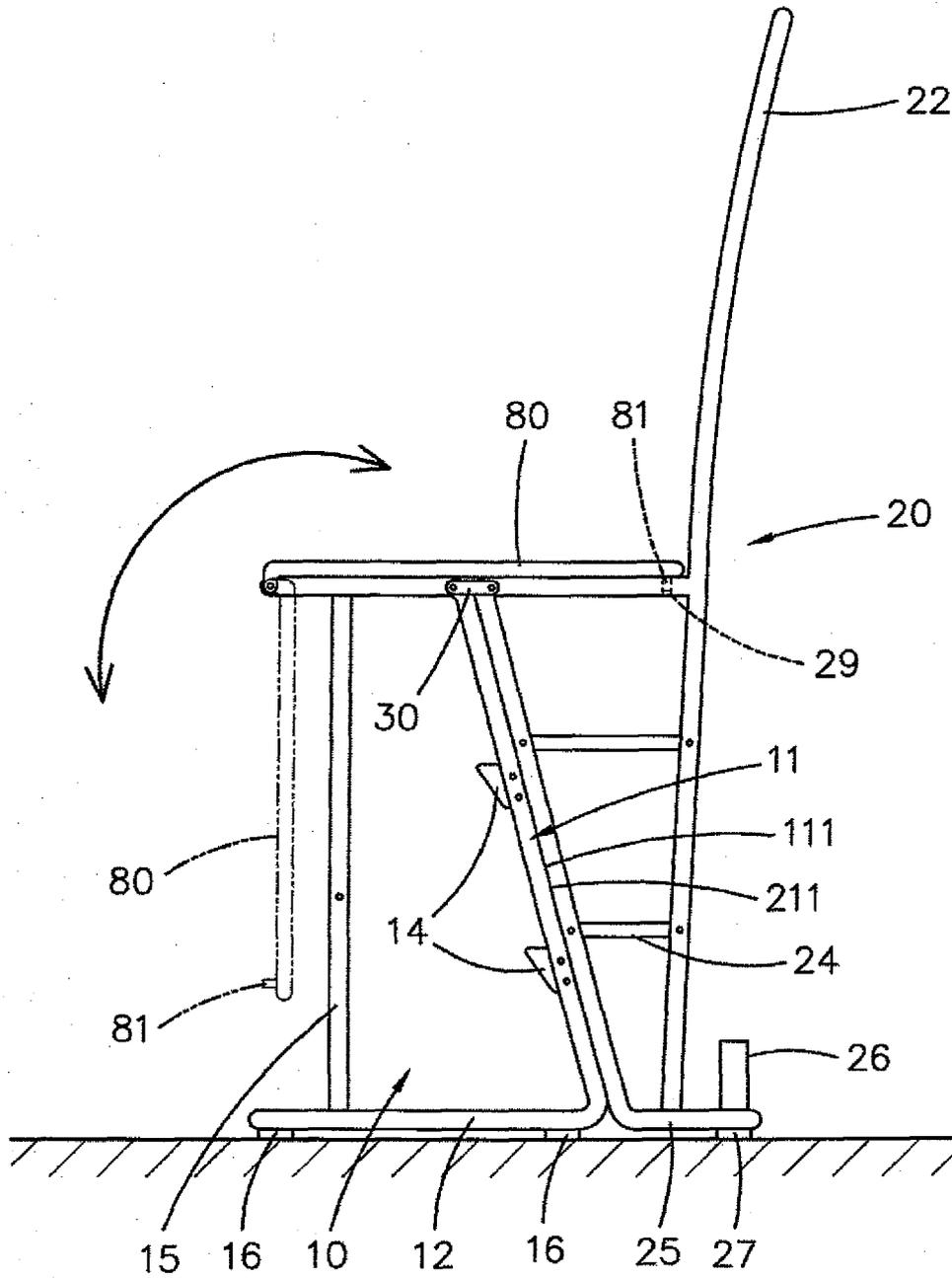


FIG. 6

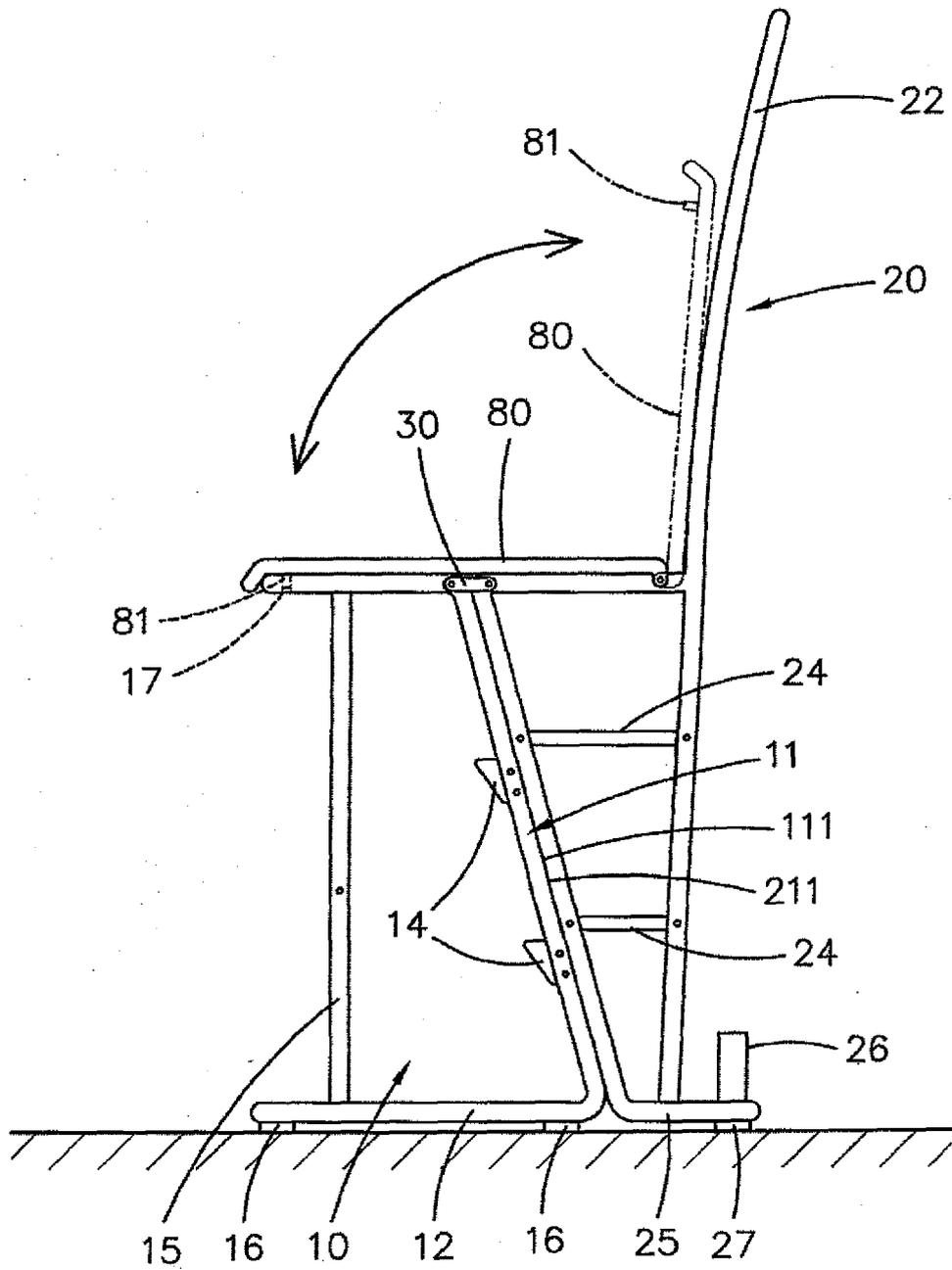


FIG. 7

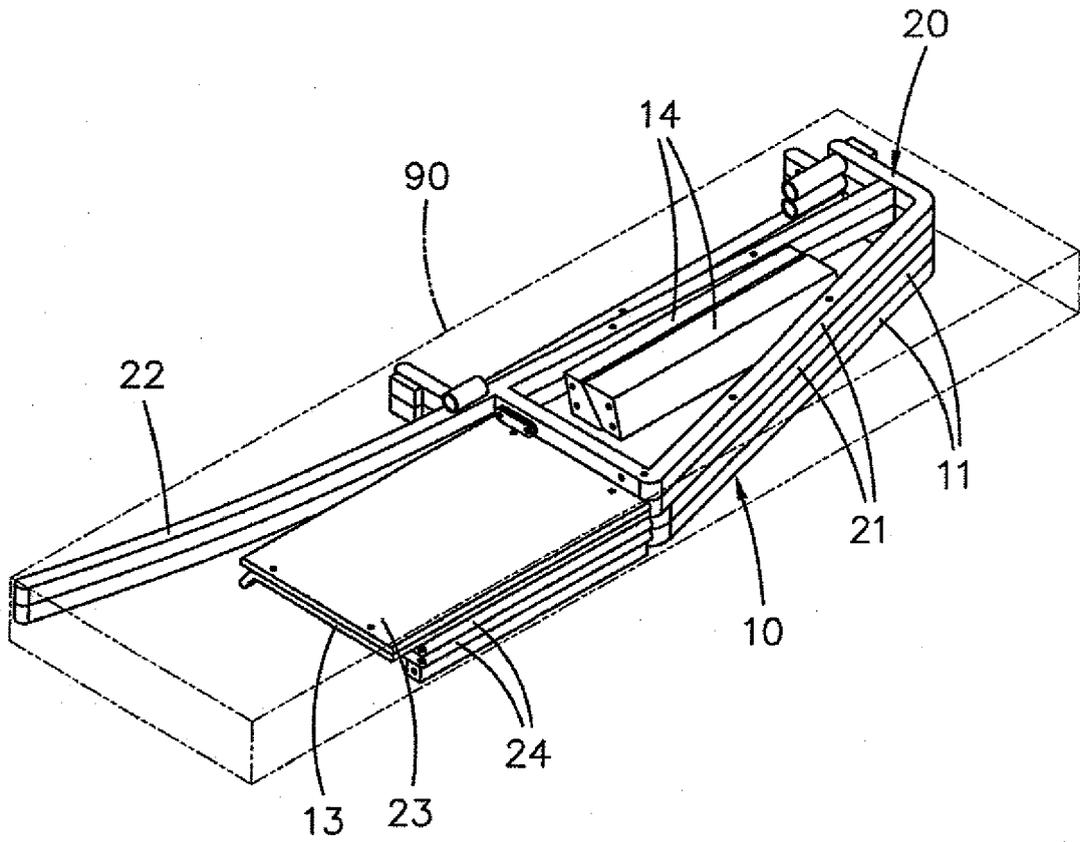


FIG. 8



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	DE 297 16 089 U1 (ROETTINGER GERHARD [DE]) 30 October 1997 (1997-10-30) * claim; figures * -----	1	INV. E06C1/00 A47C12/02 E06C7/46
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Y	-----	3,4	
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			TECHNICAL FIELDS SEARCHED (IPC)
			E06C A47C
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		12 February 2007	Amghar, Norddin
CATEGORY OF CITED DOCUMENTS			
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	

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 06 11 3090

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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12-02-2007

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82