

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
5 August 2004 (05.08.2004)

PCT

(10) International Publication Number
WO 2004/065730 A1

(51) International Patent Classification⁷: **E04H 15/40**

(21) International Application Number:
PCT/GB2003/005718

(22) International Filing Date:
31 December 2003 (31.12.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10/336,286 3 January 2003 (03.01.2003) US

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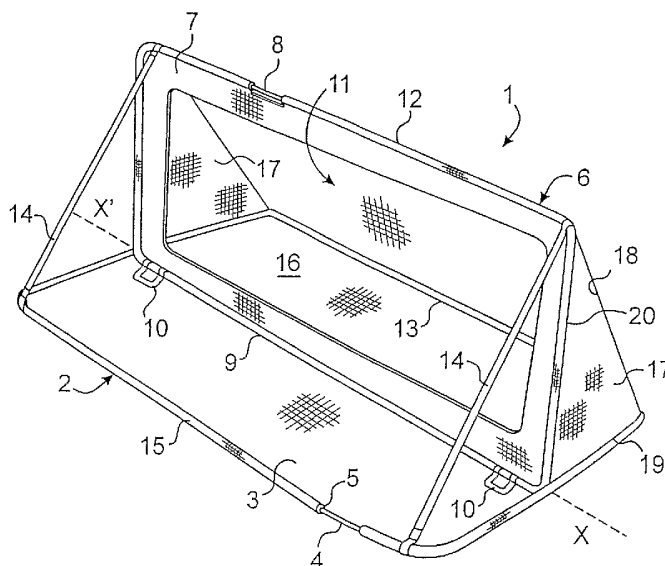
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(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (regional): ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: COLLAPSIBLE AND FOLDABLE CANVAS STRUCTURE



(57) Abstract: A collapsible and foldable canvas structure has only two structural panels (2, 6), each formed by a piece of fabric (3, 7) material spread across and secured about its periphery to a resiliently flexible wire frame (4, 8). One of the panels (2) is laid flat on the ground or other (6) supporting surface; the other rises vertically from a median section of the first and is held by straps (14) or by sheets (11) of fabric material not structured or framed by any wire but joined to the top (12) of the vertical panel and to the outer edges (13, 15) of the flat one. A window (16) cut on the center of the vertical panel provides access from one side to the other. The panels are substantially commensurate. They can be brought back together and twisted along with the remaining components of the structure into a compact package. The structure can also be laid on one of its sides for alternate uses.

WO 2004/065730 A1



Published:

— *with international search report*

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COLLAPSIBLE AND FOLDABLE CANVAS STRUCTURE

Field of the Invention

This invention relates to tents and other light, temporary structures made of canvas stretched over foldable armatures.

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Background of the Invention

There is disclosed in the prior art, several types of collapsible and foldable tents and similar structures which use armatures made of wire loops across which sheets of canvas have been spread and attached about their periphery. U.S. Patent No. 4,825,892 Norman, which patent is incorporated in this specification by this reference, discloses a typical embodiment of this type of structure.

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In most self-erecting canvas structures of the prior art, the structural or supporting elements are constituted by roof, wall and floor panels, each including a resiliently wire frame. In some cases, one of the wire frame-supported elements is strengthened or replaced by external supporting or anchoring components such as posts, stakes, and other rigid implements which add weight and volume to the structure in its collapsed configuration.

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The instant invention results from an attempt to simplify the construction of collapsible and foldable canvas structures by limiting the number of framed panels.

Summary of the Invention

The principal and secondary objects of this invention

are to provide a collapsible and foldable canvas structure that requires a limited number of structural panels made of a resilient wire frame upon which a piece of material has been stretched and peripherally secured, and to offer such a structure in a variety of configurations having multiple uses.

These and other valuable objects are achieved by using, as basic elements of a collapsible and foldable canvas structure, a preferably rectangular base panel having two opposite, longitudinal edges and a median longitudinal axis, and second panel held vertically and orthogonally above the longitudinal median axis of the base panel. Each of the panels comprises a piece of fabric material spread across and peripherally secured to a resilient wire frame. The frame may be constituted by a closed wire loop confined within a channel formed in the periphery of the sheet of fabric material. Alternately, the frame may be an open length of wire extending along all the edges of the piece of fabric material minus one. Both panels are commensurate and can be laid one on top of the other in a collapsed configuration then twisted into a compact package for transportation or storage. The second panel has a large window cut therethrough to allow passage from one side of the panel to the other. The second panel is held in its vertical position, in the absence of any other wire-framed panel, by two flexible and pliable tensile members such as one or more fabric web or straps or, preferably, by two

sheets of fabric material, each of said members having a longitudinal edge attached to the top edge of the second panel and another opposite longitudinal edge attached to a longitudinal edge of the base panel.

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Brief Description of the Drawing

Figure 1 is a perspective view of a first embodiment of the invention;

Figure 2 is a perspective view of a second embodiment of the invention;

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Figure 3 is a cross-sectional view of a third embodiment of the invention; and

Figure 4 is a perspective view of a fourth embodiment of the invention.

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Figure 5 is a perspective view of a fifth embodiment of the invention;

Figure 6 is a perspective view of a sixth embodiment of the invention; and

Figure 7 is a front elevational view thereof.

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Description of the Preferred Embodiment of the Invention

Referring now to the drawing, there is shown in Figure 1, a first embodiment of a collapsible and foldable canvas structure 1 according to the invention. The structure comprises a base panel 2 made of a rectangular sheet of fabric material 3 stretched across, and peripherally secured to a resiliently flexible wire frame 4. According to a fabrication method well-known in the art, the wire frame 4 is captured in a tubular sleeve 5 formed along the edges of the piece of fabric material 3. A second panel 6 of substantially the same shape and dimension as the base panel 2 is positioned in a vertical position orthogonally to the

first panel 2 and approximately above the median longitudinal axis X-X' of the first panel 2. The second panel 6 is similarly constructed from a piece of fabric material 7 spread across and peripherally attached to a second resiliently flexible wire frame 8. The lower edge 9 of the second panel is releasably attached to the base panel 2 by means of cooperating hooks-and-loop fabric fastener patches 10 or other equivalent attaching means such as straps, laces or pressure fasteners. A third panel 11 formed by a sheet of fabric material not structured by any peripheral wire armature extends from the top edge 12 of the second panel 6 to one of the longitudinal edges 13 of the base panel 2. A pair of straps are releasably attached at opposite ends of the top edge 12 of the second panel and to the other longitudinal edge 15 of the first panel 2. The back panel 11 and the straps 14 form tensile members dimensioned to place and keep the second panel 6 in a vertical orientation when the base panel 2 is laid on the ground or other horizontal surface. A large aperture or window 16 is cut through the second panel 6. Two triangular pieces 17 of fabric material are either, permanently secured along a first side to a latitudinal edge 18 of the third panel 11, along a second side to one half of a latitudinal edge 19 of the base panel 2, and along the third side 20 to a latitudinal side of the second panel 6, or secured wholly or partially only along one or two sides.

This particular structure can be used as a target or

goal in the practice of soccer, hockey or other similar sports. Without the aperture through the second panel 11, it can be used as a projection screen or as a tent or other type of temporary shelter.

5 The second embodiment of the invention 21 illustrated in Figure- 2 includes a base panel 22, a vertical panel 23 and a third panel 24 that are essentially similar to those described in connection with the first embodiment of Figure 1. A fourth panel 25 similar and symmetrical to the third
10 panel 24 is used in lieu of the straps 14 of the first embodiment to hold the second panel 23 in its vertical orientation. Triangular end walls 26 unsecured to any frame, one of which is shown in an open position on the drawing, are made of fabric material and provide a
15 releasable closure at either end of the structure. The window aperture 27 in the vertical panel 23 can be eliminated to provide an effective septum between two halves of the structure. At least one of the lateral panels 24, 25 should be detachable along one of its longitudinal edges or
20 have a width equal to or greater than the common width of the base and vertical panels in order to allow for easy collapsing and folding of the structure. The third and fourth panels 24, 25 are preferably made of a single sheet of fabric material permanently secured in its median section
25 to the top edge 12 of the second panel, and at both ends to the longitudinal edges of the base panel. Alternately, two pairs of straps 34, 35 can be used in lieu of the third and

fourth panels as illustrated in Figure 4. The second panel is stabilized with four diagonal straps 36. It should be understood that the end walls 26 may be permanently secured along all their three sides to the other panels providing that an access to the inside the structure is practiced through one of the end walls 26 or one of the longitudinal panels 24, 25.

In the third embodiment of the invention 28 illustrated in Figure 3, three framed panels 29, 30, 31 are used without need of any strap or other panel between the top of the structure 32 and the unattached longitudinal edge 33 of the base panel 29.

While the preferred embodiments of the invention have been described, modifications can be made and other embodiments may be devised without departing from the spirit of the invention and the scope of the appended claims.

In the embodiment of the invention illustrated in Figure 5, the structure of Figure 1 is modified to create a target for use in a ball or beanbag tossing game, by removing the fabric material 7 of the second panel 6, and cutting target holes 37 into the back panel 11. It should be noted that the fabric material 7 of the second panel could be retained with or without a window cut therethrough to lend structural stability to the embodiment. Similarly, the fabric material 3 of the base panel could be omitted, and the second panel secured to the wire frame 4 of the base.

As illustrated in Figures 6 and 7, the basic structure of the previously described embodiments of the invention is rotated 120 degrees about the median axis of the base, or first panel 2 and rested upon one of its sides to form a golf game practicing implement. A mat 38, preferably made of some elastomeric material, is laid down in front of the base with one of its longitudinal edges secured to a median portion of the base 2 by hook-and-loop patches 39 of fabric fasteners to form a ramp into which target holes 40 have been cut. The back panel of Figure 1 has been replaced by a pair of straps 41 acting as tensile members in cooperation with the other pair of straps 14 to hold the second panel in an orthogonal position to the base. The straps may be constituted by elongated pieces of fabric material.

CLAIMS

1 1. A collapsible and foldable canvas structure which
2 comprises:

3 a base having a longitudinal, median axis and including
4 a first resiliently flexible wire frame and a first piece of
5 fabric material spread across and peripherally attached to
6 said first frame;

7 a flexible and pliable tensile member;

8 each of said base and tensile member having first and
9 second opposite longitudinal edges parallel to said axis,
10 the first longitudinal edge of one being attached to the
11 first longitudinal edge of the other; and

12 a second resiliently flexible wire frame having a top
13 edge attached to the second longitudinal edge of said
14 tensile member and a bottom edge opposite said top edge
15 resiliently attached to said base substantially along said
16 axis;

17 said tensile member and second frame being shaped and
18 dimensioned to place said second frame in a substantially
19 vertical plane when said base is laid upon an horizontal
20 surface.

1 2. The structure of Claim 1, wherein said tensile member
2 comprises a sheet of fabric material.

1 3. The structure of Claim 2, wherein said tensile member
2 further comprises a third resiliently flexible wire frame,
3 and wherein said second piece of material is spread across

4 and attached to said third frame.

1 4. The structure of Claim 1 which further comprises a third
2 piece of fabric material spread across and attached to said
3 second frame.

1 5. The structure of Claim 4, wherein said third piece has
2 an aperture therethrough.

1 6. The structure of Claim 4 which further comprises a front
2 panel including an additional piece of fabric material not
3 structured by any frame;

4 said front panel having first and second opposite and
5 longitudinal edges, one of said edges being attached to the
6 second longitudinal edge of said base and the other to the
7 top edge of said second frame.

1 7. The structure of Claim 6 which further comprises
2 triangular pieces of fabric material each being shaped and
3 dimensioned for attachment to latitudinal edges of said
4 front and back panels.

1 8. The structure of Claim 3 which further comprises a third
2 piece of fabric material spread across and peripherally
3 attached to said second frame.

1 9. The structure of Claim 8, wherein said third piece has

2 an aperture therethrough.

1 10. The structure of Claim 8 which further comprises a
2 front panel including an additional piece of fabric material
3 not structured by any frame;

4 said front panel having first and second opposite and
5 longitudinal edges, one of said edges being attached to the
6 second longitudinal edge of said base and the other to the
7 top edge of said second frame.

1 11. The structure of Claim 10 which further comprises
2 triangular pieces of fabric material each being shaped and
3 dimensioned for attachment to latitudinal edges of said
4 front and back panels.

1 12. The structure of Claim 1 which further comprises at
2 least one strap dimensioned for attachment between said top
3 edge and said second longitudinal edge.

1 13. The structure of Claim 4 which further comprises a pair
2 of straps each dimensioned for attachment between and
3 astride said top edge and second longitudinal edge.

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14. A self-erecting and foldable structure which comprises:

first and second panels having substantially equal widths, each of said panels including a resiliently flexible wire frame, and a close one of said panels having a piece of fabric material spread across and attached to one of said frames, each of said panels further including two opposite, parallel and substantially straight longitudinal edges and opposite latitudinal edges;

a first tensile member made of at least one piece of fabric material not structured by any peripheral armature, said tensile member being secured along two longitudinal edges to a first of said longitudinal edges of each of said first and second panels;

means for securing a second of said longitudinal edges of said second panel to a median portion of the first panel; and

means for holding said first and second panels substantially orthogonal to each other.

15. The structure of Claim 14, wherein the close one of said panels has a window cut therethrough.

16. The structure of Claim 14 wherein said means for holding comprise a second tensile member attached at opposite lateral edges to the secured edges of said second and third panels and to the unsecured edge of said first panel.

17. The structure of Claim 14, wherein each of said tensile members comprises at least one piece of fabric material unsupported by any wire frame.

18. The structure of Claim 14 which further comprises a pair of triangular pieces of fabric material each being spaced and dimensioned for attachment to latitudinal edges of said second and third panels.

19. The structure of Claims 14 which further comprises a mat having at least one hole cut therethrough, and a longitudinal edge secured to a median portion of said close one of said panel.

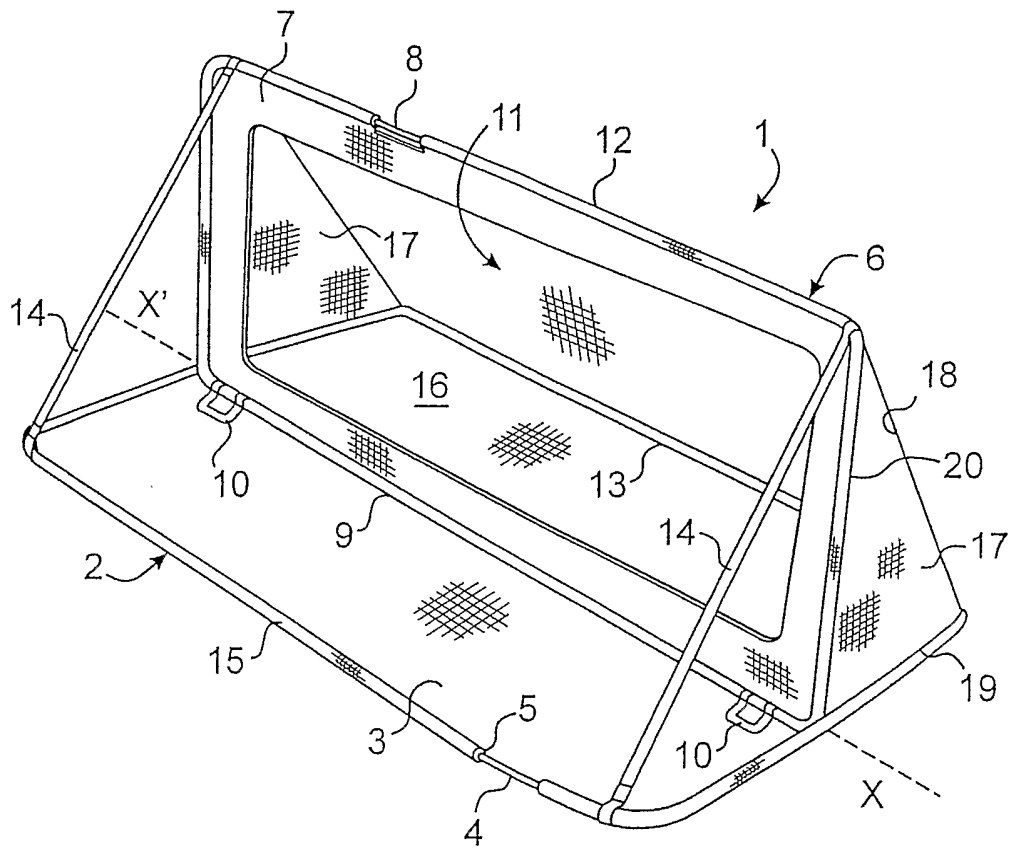


FIG. 1

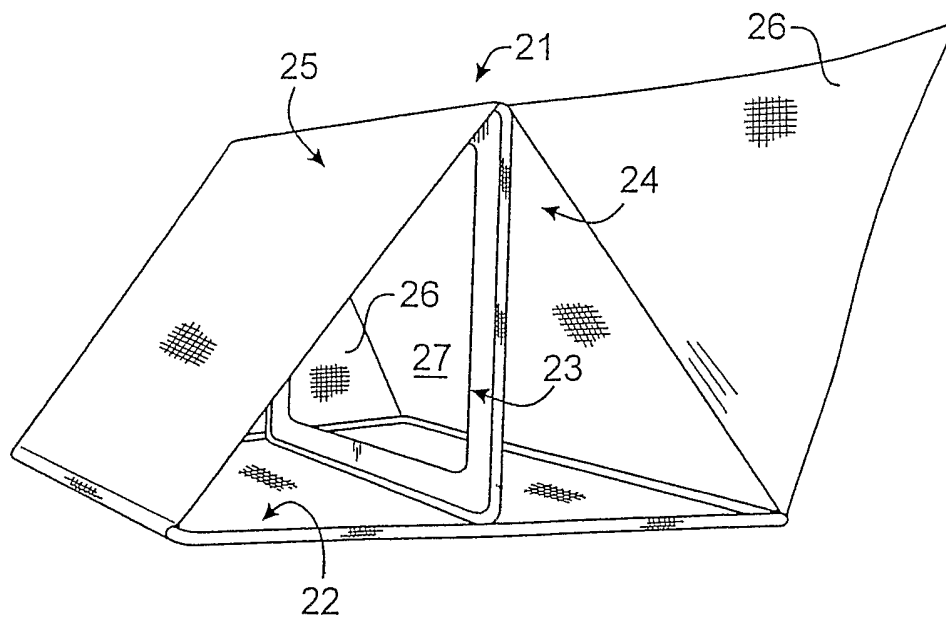


FIG. 2

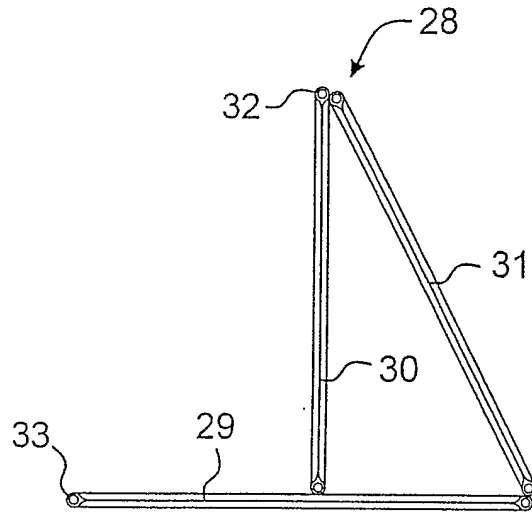


FIG. 3

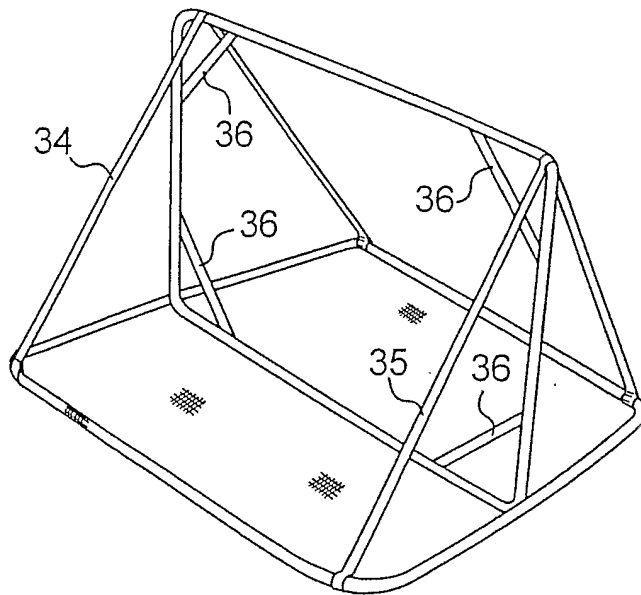


FIG. 4

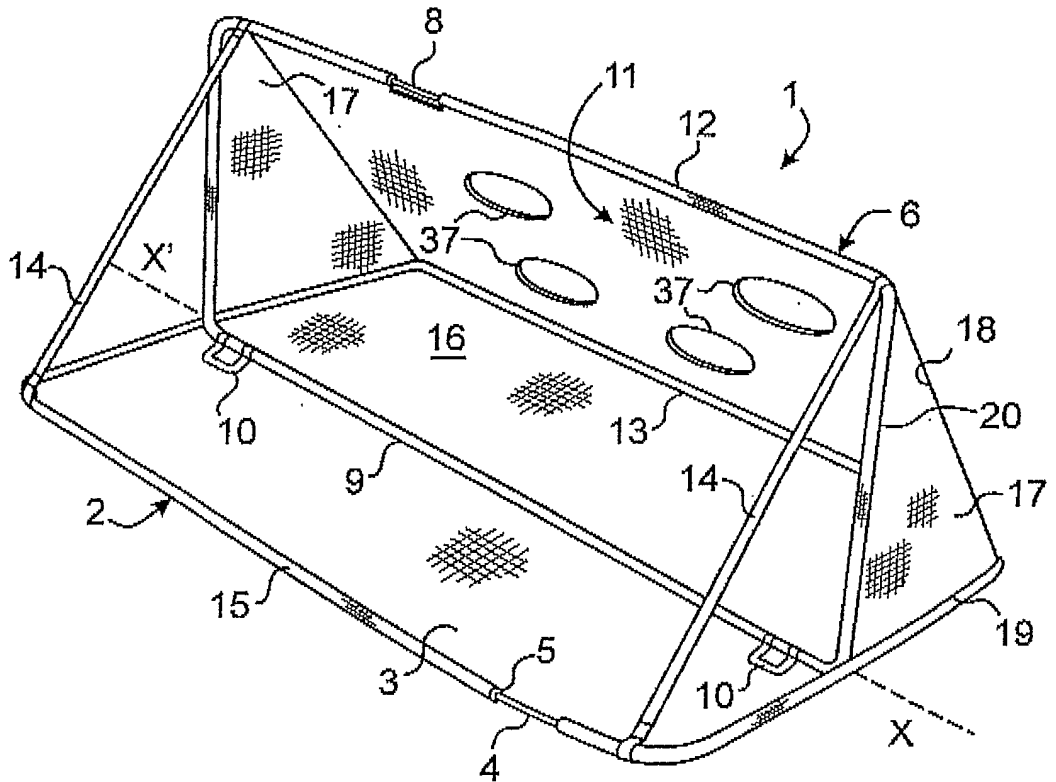


FIG. 5

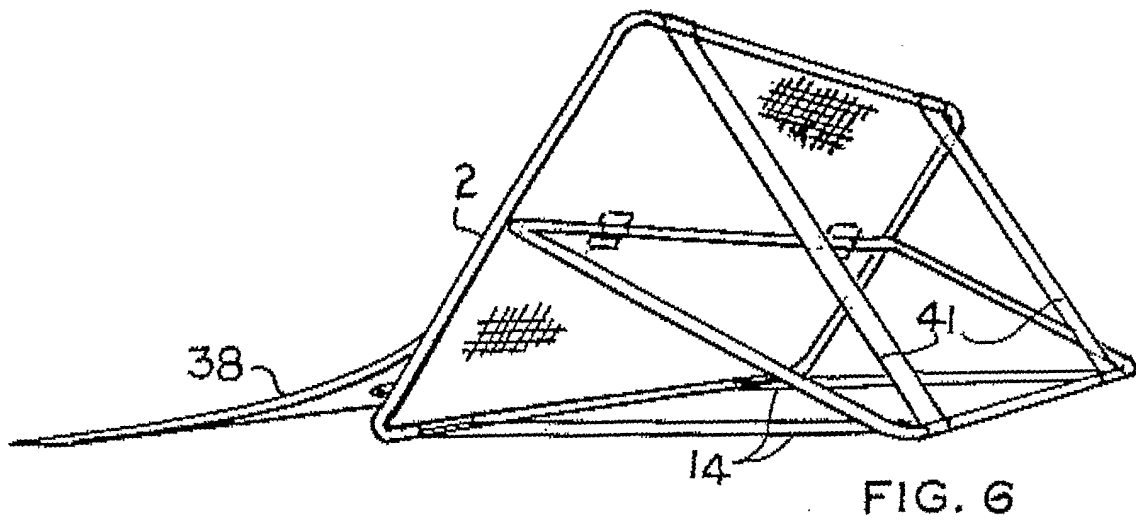


FIG. 6

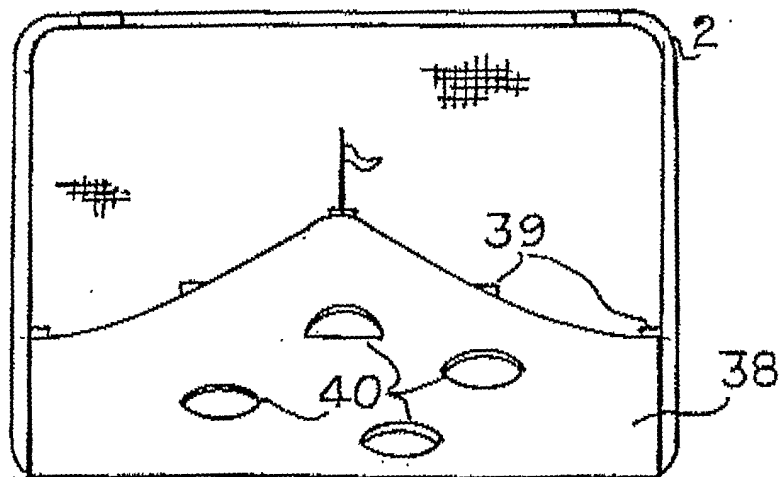


FIG. 7

INTERNATIONAL SEARCH REPORT

Internal Application No
PCT/GB 03/05718

A. CLASSIFICATION OF SUBJECT MATTER IPC 7 E04H15/40				
According to International Patent Classification (IPC) or to both national classification and IPC				
B. FIELDS SEARCHED				
Minimum documentation searched (classification system followed by classification symbols) IPC 7 E04H				
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched				
Electronic data base consulted during the international search (name of data base and, where practical, search terms used) EPO-Internal, PAJ				
C. DOCUMENTS CONSIDERED TO BE RELEVANT				
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
A	EP 1 094 177 A (WORLDS APART LTD) 25 April 2001 (2001-04-25) page 9, line 74 -page 11, line 84; figures 16-22	1-19		
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<input checked="" type="checkbox"/> Further documents are listed in the continuation of box C.				
<input checked="" type="checkbox"/> Patent family members are listed in annex.				
° Special categories of cited documents :				
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none; vertical-align: top;"> "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "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) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed </td> <td style="width: 50%; border: none; vertical-align: top;"> "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 "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "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. "&" document member of the same patent family </td> </tr> </table>			"A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "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) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed	"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 "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "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. "&" document member of the same patent family
"A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "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) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed	"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 "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "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. "&" document member of the same patent family			
Date of the actual completion of the international search <p style="text-align: center; font-size: 1.2em;">26 April 2004</p>		Date of mailing of the international search report <p style="text-align: center; font-size: 1.2em;">04/05/2004</p>		
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx: 31 651 epo nl, Fax: (+31-70) 340-3016		Authorized officer <p style="text-align: center; font-size: 1.2em;">Stefanescu, R</p>		

INTERNATIONAL SEARCH REPORT

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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A	PATENT ABSTRACTS OF JAPAN vol. 1996, no. 07, 31 July 1996 (1996-07-31) & JP 08 057164 A (TAKARA CO LTD), 5 March 1996 (1996-03-05) abstract -----	1-5,8,9, 14-16,18
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