UNITED STATES PATENT AND TRADEMARK OFFICE
PATENT TRIAL AND APPEAL BOARD

Camel Manufacturing Company, LLC

Petitioner,

v.

DLX Enterprises, LLC,

Patent Owner.

Case No. PGR2024-00033
U.S. Patent No. 11,732,496

EXHIBIT 1002

PROSECUTION HISTORY OF U.S. PATENT APPLICATION NO 17/886132

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/886,132	08/11/2022	Jonathan Urhausen	9693-012A-CIPB	8474

4678 7590 08/23/2023

MACCORD MASON PLLC
2733 Horse Pen Creek Road, Suite 101
GREENSBORO, NC 27410

EXAMINER	
CANFIELD, ROBERT	

ART UNIT	PAPER NUMBER
3636	

MAIL DATE	DELIVERY MODE
08/23/2023	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Camel Manufacturing Company, LLC,
Case No. PGR2024-00033; Exhibit 1002

UNITED STATES PATENT AND TRADEMARK OFFICE

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United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.
17/886,132	22-Aug-2023	11732496

MACCORD MASON PLLC
2733 Horse Pen Creek Road, Suite 101
GREENSBORO, NC 27410

EGRANT NOTIFICATION

Your electronic patent grant (eGrant) is now available, which can be accessed via Patent Center at https://patentcenter.uspto.gov

The electronic patent grant is the official patent grant under 35 U.S.C. 153. For more information, please visit https://www.uspto.gov/electronicgrants

Camel Manufacturing Company, LLC,
Case No. PGR2024-00033; Exhibit 1002

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/886,132	08/22/2023	11732496	9693-012A-CIPB	8474

4678 7590 08/02/2023

MACCORD MASON PLLC
2733 Horse Pen Creek Road, Suite 101
GREENSBORO, NC 27410

ISSUE NOTIFICATION

The projected patent number and issue date are specified above. The patent will issue electronically. The electronically issued patent is the official patent grant pursuant to 35 U.S.C. § 153. The patent may be accessed on or after the issue date through Patent Center at https://patentcenter.uspto.gov/. The patent will be available in both the public and the private sides of Patent Center. Further assistance in electronically accessing the patent, or about Patent Center, is available by calling the Patent Electronic Business Center at 1-888-217-9197.

The USPTO is implementing electronic patent issuance with a transition period, during which period the USPTO will mail a ceremonial paper copy of the electronic patent grant to the correspondence address of record. Additional copies of the patent (i.e., certified and presentation copies) may be ordered for a fee from the USPTO's Certified Copy Center at https://certifiedcopycenter.uspto.gov/index.html. The Certified Copy Center may be reached at (800)972-6382.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Patents Stakeholder Experience (OPSE), Stakeholder Support Division (SSD) at (571)-272-4200.

Camel Manufacturing Company, LLC,
Case No. PGR2024-00033; Exhibit 1002

INVENTOR(s) (Please see PAIR WEB site http://pair.uspto.gov for additional inventors):

Jonathan Urhausen, Eugene, OR;
Adam Barr, Eugene, OR;
Donald Bierman, Eugene, OR;

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

DLX Enterprises, LLC, Eugene, OR;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

Camel Manufacturing Company, LLC,
Case No. PGR2024-00033; Exhibit 1002

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	17886132
Filing Date	2022-08-11
First Named Inventor	Jonathan Urhausen
Art Unit	
Examiner Name	
Attorney Docket Number	9693-012A-CONB

Change(s) applied to document, /A.G./ 6/21/2023	6	FR-2997984	FR		05/2014	LAFOUX		

If you wish to add additional Foreign Patent Document citation information please click the Add button Add

NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1		

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature	/Robert Canfield/ (04/21/2023)	Date Considered	04/21/2023

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /RC/

Camel Manufacturing Company, LLC,
Case No. PGR2024-00033; Exhibit 1002

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17886132
	Filing Date	2022-08-11
	First Named Inventor	Jonathan Urhausen
	Art Unit	
	Examiner Name	
	Attorney Docket Number	9693-012A-CONB

	19	20070125410		2007-06-07	Marty L. Williams	
	20	20070039639		2007-02-22	David Duncan	
	21	20060283103		2006-12-21	Lian-Shun Chen	
	22	20050189009		2005-09-01	Thomas A. Walter	

If you wish to add additional U.S. Published Application citation information please click the Add button. Add

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
Change(s) applied to document, /A.G./ 6/21/2023	1	CA-2837116	CA		11/2012	THEODORE R. ZEIGLER		
	2	DE-29716289	DE		10/1997	MEHLER		
	3	DE-29517290	DE		12/1995	UMAREX		
	4	DE-29510827	DE		09/1995	ROYALBEACH		
	5	FR-2705718	FR		12/1994	ARNAULD THERY		

/Robert Canfield/ (04/21/2023) 04/21/2023

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /RC/

Camel Manufacturing Company, LLC, Case No. PGR2024-00033; Exhibit 1002

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	17886132
Filing Date	2022-08-11
First Named Inventor	Jonathan Urhausen
Art Unit	
Examiner Name	
Attorney Docket Number	9693-012A-CONB

	53	3955328		~~1976-05-11~~ 05/1976	Jeffrey Lindsay	
Change(s) applied to document, /J.T./ 6/23/2023	54	3559353		1971-02-05	Partridge	

If you wish to add additional U.S. Patent citation information please click the Add button. Add

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20130008478		2013-01-10	Alejandro Prieto Estebanez	
	2	20140182643		2014-07-03	Baoqing Yang	
	3	20060260666		2006-11-23	Choi	
	4	20070051399		2007-03-08	In-Young Jung	
	5	20150167343		2015-06-18	Miao Sheng Fang	
	6	20150240513		2015-08-27	Miao Sheng Fang	
	7	20180155952		2018-06-07	Jay Robert	

/Robert Canfield/ (04/21/2023) 04/21/2023

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /RC/

Camel Manufacturing Company, LLC, Case No. PGR2024-00033; Exhibit 1002

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications. **Because electronic patent issuance may occur shortly after issue fee payment, any desired continuing application should preferably be filed prior to payment of this issue fee in order not to jeopardize copendency.**

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

4678 7590 06/05/2023

MACCORD MASON PLLC
2733 Horse Pen Creek Road, Suite 101
GREENSBORO, NC 27410

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/886,132	08/11/2022	Jonathan Urhausen	9693-012A-CIPB	8474

TITLE OF INVENTION: SHELTER AND HUB SYSTEM

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0.00	$0.00	$480	09/05/2023

EXAMINER	ART UNIT	CLASS-SUBCLASS
CANFIELD, ROBERT	3636	135-124000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/AIA/122 or PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/AIA/47 or PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 MacCord Mason PLLC
2
3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: DLX Enterprises, LLC

(B) RESIDENCE: (CITY and STATE OR COUNTRY): Eugene, Oregon

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. Fees submitted: ☒ Issue Fee ☐ Publication Fee (if required)

4b. Method of Payment: *(Please first reapply any previously paid fee shown above)*

☒ Electronic Payment via Patent Center or EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. 50-1923

5. **Change in Entity Status** (from status indicated above)

☐ Applicant certifying micro entity status. See 37 CFR 1.29

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

☐ Applicant asserting small entity status. See 37 CFR 1.27

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

☐ Applicant changing to regular undiscounted fee status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature /Kelly B. Robinson/ Date July 5, 2023

Typed or printed name Kelly B. Robinson Registration No. 72,960

Camel Manufacturing Company, LLC
Case No. PGR2024-00033; Exhibit 1002

Electronic Patent Application Fee Transmittal

Application Number:	17886132
Filing Date:	11-Aug-2022
Title of Invention:	SHELTER AND HUB SYSTEM
First Named Inventor/Applicant Name:	Jonathan Urhausen
Filer:	Kelly B. Robinson/Nichol Neal
Attorney Docket Number:	9693-012A-CIPB

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
UTILITY APPL ISSUE FEE	2501	1	480	480

Camel Manufacturing Company, LLC,
Case No. PGR2024-00033; Exhibit 1002

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**480**

Electronic Acknowledgement Receipt

EFS ID:	48250475
Application Number:	17886132
International Application Number:	
Confirmation Number:	8474
Title of Invention:	SHELTER AND HUB SYSTEM
First Named Inventor/Applicant Name:	Jonathan Urhausen
Customer Number:	4678
Filer:	Kelly B. Robinson/Nichol Neal
Filer Authorized By:	Kelly B. Robinson
Attorney Docket Number:	9693-012A-CIPB
Receipt Date:	05-JUL-2023
Filing Date:	11-AUG-2022
Time Stamp:	16:31:53
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$480
RAM confirmation Number	E202375G33089700
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Camel Manufacturing Company, LLC,
Case No. PGR2024-00033; Exhibit 1002

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	9693-012A-CIPB_Issue_fee_transmittal.pdf	1899731 558e27756ece22be1add258a8a5fbb7187e5972c	no	1
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	38152 3df94dda3ce31e5d2b69b40448b69085e3e398c4	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	1937883		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

4678 7590 06/05/2023

MACCORD MASON PLLC
2733 Horse Pen Creek Road, Suite 101
GREENSBORO, NC 27410

EXAMINER
CANFIELD, ROBERT

ART UNIT	PAPER NUMBER
3636	

DATE MAILED: 06/05/2023

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/886,132	08/11/2022	Jonathan Urhausen	9693-012A-CIPB	8474

TITLE OF INVENTION: SHELTER AND HUB SYSTEM

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0.00	$0.00	$480	09/05/2023

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 40% the amount of undiscounted fees, and micro entity fees are 20% the amount of undiscounted fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

Camel Manufacturing Company, LLC,
Case No. PGR2024-00033; Exhibit 1002

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications. **Because electronic patent issuance may occur shortly after issue fee payment, any desired continuing application should preferably be filed prior to payment of this issue fee in order not to jeopardize copendency.**

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

4678 7590 06/05/2023
MACCORD MASON PLLC
2733 Horse Pen Creek Road, Suite 101
GREENSBORO, NC 27410

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/886,132	08/11/2022	Jonathan Urhausen	9693-012A-CIPB	8474

TITLE OF INVENTION: SHELTER AND HUB SYSTEM

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nonprovisional	SMALL	$480	$0.00	$0.00	$480	09/05/2023

EXAMINER	ART UNIT	CLASS-SUBCLASS
CANFIELD, ROBERT	3636	135-124000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

❑ Change of correspondence address (or Change of Correspondence Address form PTO/AIA/122 or PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/AIA/47 or PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____
2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. Fees submitted: ❑ Issue Fee ❑ Publication Fee (if required)

4b. Method of Payment: *(Please first reapply any previously paid fee shown above)*

❑ Electronic Payment via Patent Center or EFS-Web ❑ Enclosed check ❑ Non-electronic payment by credit card (Attach form PTO-2038)

❑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

5. **Change in Entity Status** (from status indicated above)

❑ Applicant certifying micro entity status. See 37 CFR 1.29

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

❑ Applicant asserting small entity status. See 37 CFR 1.27

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

❑ Applicant changing to regular undiscounted fee status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

PTOL-85 Part B (08-18) Approved for use through 01/31/2020 OMB 0651-0033 U.S. Patent and Trademark Office, U.S. DEPARTMENT OF COMMERCE

Camel Manufacturing Company, LLC
Case No. PGR2024-00033; Exhibit 1002

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/886,132	08/11/2022	Jonathan Urhausen	9693-012A-CIPB	8474

4678 7590 06/05/2023

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EXAMINER	
CANFIELD, ROBERT	
ART UNIT	PAPER NUMBER
3636	

DATE MAILED: 06/05/2023

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Camel Manufacturing Company, LLC,
Case No. PGR2024-00033; Exhibit 1002

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 17/886,132	Applicant(s) Urhausen et al.	
	Examiner ROBERT CANFIELD	Art Unit 3636	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☑ This communication is responsive to 5/18/23 interview.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

3. ☑ The allowed claim(s) is/are 1-20 . As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see **http://www.uspto.gov/patents/init_events/pph/index.jsp** or send an inquiry to **PPHfeedback@uspto.gov.**

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☐ All b) ☐ Some* c) ☐ None of the:

   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____ .

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____.
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____.
4. ☑ Interview Summary (PTO-413), Paper No./Mail Date. _____.
5. ☑ Examiner's Amendment/Comment
6. ☐ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/Robert Canfield/
Primary Examiner, Art Unit 3636

Camel Manufacturing Company, LLC,
Case No. PGR2024-00033; Exhibit 1002

Notice of Pre-AIA or AIA Status

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in an interview with Kelly Robinson on 5/18/23.

3. The application has been amended as follows:

1. (**Currently Amended**) A rapid-deployment hub shelter comprising:

a frame for supporting the shelter, the frame including a frame front end, a frame back end, a frame side, and a frame opposite side,

the frame front end, frame back end, frame side and frame opposite side each having:

a first upper frame pole and a second upper frame pole, the first upper frame pole and the second upper frame pole joined at peak,

a first leg pole supporting the first upper frame pole and a second leg pole supporting the second upper frame pole,

a shoulder formed between each upper frame pole and each attaching leg pole,

a shoulder formed between each second upper frame pole and each attaching second leg pole,

a center frame assembly having a set of extension poles that extend outwardly from a center point to each frame peak,

a corner formed between the frame front end and each of the frame side, and the frame opposite side, and

a corner formed between the frame back end and each of the frame side, and the frame opposite side**,**

wherein the upper frame poles are directly mated at a frame peak.

2. The rapid-deployment shelter of claim 1 including a shoulder support extending between adjacent shoulders of each corner.

3. (**Currently Amended**) The rapid-deployment shelter of claim 2 wherein each corner is a **trapezoidal** ~~triangular~~ shaped corner.

4. The rapid-deployment shelter of claim 2 wherein each corner is set on a different plane than each frame front end, frame back end, frame side, and frame opposite side.

5. The rapid-deployment shelter of claim 2 wherein each corner includes a shoulder from either the front end or the back end and a shoulder from either the side or the opposite side with a shoulder support extending between.

6. The rapid-deployment shelter of claim 5 wherein each corner includes a leg from either the front end or the back end and a leg from either the side or the opposite side.

7. The rapid-deployment shelter of claim 6 wherein the center assembly interconnects the front end, back end, side and opposite side of the shelter frame.

8. The rapid-deployment shelter of claim 7 having a peak formed along each of the front end, back end, side and opposite side.

9. The rapid-deployment shelter of claim 8 including a set of supports, with one support extending between each extension pole to an upper frame pole and one support extending between each extension pole to a second upper frame pole.

10. (**Currently Amended**) The rapid-deployment shelter of claim 8 wherein each leg forming a corner meets ~~one with another~~ at ~~each~~ **a** leg footing.

11. The rapid-deployment shelter of claim 8 where the distance between each leg forming the corner narrows between the shoulders of the corner and the set of leg footings.

12. (**Currently Amended**) The rapid-deployment shelter of claim 1 wherein each of the frame front end, back end, side and opposite side is adapted to provide an opening for mating with another shelter.

13. The rapid-deployment shelter of claim 1 including an angle alpha between the upper frame pole and the leg pole and between the second upper frame pole and the second leg pole.

14. The rapid-deployment shelter of claim 1 wherein each corner separates adjacent shoulders of a frame end and a frame side.

15. (**Currently Amended**) A rapid-deployment hub shelter comprising:

a four-sided shelter frame including frame corners offset between each of the shelter sides,

a shoulder support in each corner and extending between each of the adjacent shelter sides,

a set of upper frame poles on each side of the four-sided shelter frame that mate **directly** to form a central peak along each shelter side,

a central frame assembly having extension poles that extend from the central frame assembly to each peak along each shelter side,

wherein each of the shelter sides have the same frame dimensions.

16. The rapid-deployment shelter of claim 15 wherein the set of upper frame poles each terminate at frame shoulders that are separated by the shoulder support.

17. The rapid-deployment shelter of claim 16 including footers that mate one with another at a ground surface to secure the frame corner.

18. The rapid-deployment shelter of claim 17 wherein each corner includes a set of legs that supports one of the frame sides.

19. (**Currently Amended**) The rapid-deployment shelter of claim 18 wherein each of the set of legs define a distance that narrows between the shoulder support and **a** ~~each~~ ~~of the~~ leg footing~~s~~.

20. The rapid-deployment shelter of claim 19 wherein the four-sided shelter frame is adapted to alternate between a collapsible position and a deployed position.

4. Claims 1-20 are allowed.

5. The drawings filed 8/11/22 are approved.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT CANFIELD whose telephone number is (571)272-6840. The examiner can normally be reached M-F 10-6, some Saturdays.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Dunn can be reached on 571-272-6670. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of published or unpublished applications may be obtained from Patent Center. Unpublished application information in Patent Center is available to registered users. To file and manage patent submissions in Patent Center, visit: https://patentcenter.uspto.gov. Visit https://www.uspto.gov/patents/apply/patent-center for more information about Patent Center and https://www.uspto.gov/patents/docx for information about filing in DOCX format. For additional questions, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ROBERT CANFIELD
Primary Examiner
Art Unit 3636

7. /Robert Canfield/
Primary Examiner, Art Unit 3636

Applicant-Initiated Interview Summary	**Application No.** 17/886,132	**Applicant(s)** Urhausen et al.		
	Examiner ROBERT CANFIELD	**Art Unit** 3636	**AIA (First Inventor to File) Status** Yes	**Page** 1 of 1

All Participants (applicant, applicants representative, PTO personnel)	**Title**	**Type**
ROBERT CANFIELD	Primary Examiner	Telephonic
Kelly Robinson	Attorney of Record	

Date of Interview: 18 May 2023

Issues Discussed:

Proposed Amendment(s)

Ms. Robinson called to discuss the office action mailed 4/25/23 and some proposed changes. Agreed the changes on the attached Examiner's Amendment would place the application in condition for allowance.

/Robert Canfield/ Primary Examiner, Art Unit 3636	

Applicant is reminded that a complete written statement as to the substance of the interview must be made of record in the application file. It is the applicants responsibility to provide the written statement, unless the interview was initiated by the Examiner and the Examiner has indicated that a written summary will be provided. See MPEP 713.04
Please further see:
MPEP 713.04
Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews, paragraph (b)
37 CFR § 1.2 Business to be transacted in writing

Applicant recordation instructions: The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview.

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

Camel Manufacturing Company, LLC,
Case No. PGR2024-00033; Exhibit 1002

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/886,132	Urhausen et al.
	Examiner	Art Unit
	ROBERT CANFIELD	3636

CPC - Searched*		
Symbol	Date	Examiner
(E04H15/18 OR E04B1/19 OR E04B1/1903 OR E04B7/02 OR E04B7/06 OR E04B7/08 OR E04B7/105 OR E04H15/34 OR E04H15/36 OR E04H15/44 OR E04B2001/1957).cpc.	04/21/2023	RC

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner
52	18, 90.1, Dig.10	04/21/2023	RC
135	158-160		

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
classification/text/name/citation search - attached	04/21/2023	RC
review file and search history of all parent applications and checked for possible double patenting issues		
update - attached	05/19/2023	RC

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
	see attached text queries	05/19/2023	RC

/Robert Canfield/ Primary Examiner, Art Unit 3636	

Camel Manufacturing Company, LLC,
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Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/886,132	Urhausen et al.
	Examiner	**Art Unit**
	ROBERT CANFIELD	3636

CPC						
Symbol					**Type**	**Version**
E04H	/	15	/	18	F	2013-01-01
E04H	/	15	/	50	I	2013-01-01
E04B	/	1	/	1903	I	2013-01-01
E04H	/	15	/	44	I	2013-01-01
E04H	/	15	/	36	I	2013-01-01
E04B	/	1	/	35	I	2013-01-01
E04B	/	7	/	02	I	2013-01-01
E04B	/	7	/	105	I	2013-01-01
E04B	/	7	/	06	I	2013-01-01
E04B	/	7	/	08	I	2013-01-01
E04H	/	15	/	34	I	2013-01-01
E04B	/	1	/	19	I	2013-01-01
E04B	/	2001	/	1927	A	2013-01-01
E04B	/	2001	/	1957	A	2013-01-01

CPC Combination Sets							
Symbol					**Type**	**Set**	**Ranking**	**Version**
	/		/					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	20	
/Robert Canfield/ Primary Examiner, Art Unit 3636	19 May 2023	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	15	19A

U.S. Patent and Trademark Office

Part of Paper No.: 20230519

Camel Manufacturing Company, LLC,
Case No. PGR2024-00033; Exhibit 1002

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/886,132	Urhausen et al.
	Examiner	**Art Unit**
	ROBERT CANFIELD	3636

INTERNATIONAL CLASSIFICATION				
CLAIMED				
E04H	/	15	/	18
E04H	/	15	/	34
E04B	/	7	/	06
E04B	/	7	/	08

NON-CLAIMED				
	/		/	

US ORIGINAL CLASSIFICATION	
CLASS	**SUBCLASS**

CROSS REFERENCES(S)						
CLASS	**SUBCLASS (ONE SUBCLASS PER BLOCK)**					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	20	
/Robert Canfield/ Primary Examiner, Art Unit 3636	19 May 2023	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	15	19A

U.S. Patent and Trademark Office — Part of Paper No.: 20230519

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Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/886,132	Urhausen et al.
	Examiner	**Art Unit**
	ROBERT CANFIELD	3636

☑ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIMS

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	20	
/Robert Canfield/ Primary Examiner, Art Unit 3636	19 May 2023	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	15	19A

U.S. Patent and Trademark Office — Part of Paper No.: 20230519

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Case No. PGR2024-00033; Exhibit 1002

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L1	3	((("DLX") near3 ("ENTERPRISES") near3 ("LLC"))).AS,AANM.	(USPAT)	OR	ON	ON	2023/04/21 10:57 AM
L2	19	((("URHAUSEN") near3 ("Jonathan")) OR (("BARR") near3 ("Adam")) OR (("BIERMAN") near3 ("Donald"))).INV.	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2023/04/21 10:59 AM
L3	76	("10060151" OR "10309093" OR "10858856" OR "10995516" OR "20040173252" OR "20050189009" OR "20050204680" OR "20050204681" OR "20060260666" OR "20060283103" OR "20070039639" OR "20070051399" OR "20070084493" OR "20070125410" OR "20080017232" OR "20080017233" OR "20080264462" OR "20100170162" OR "20120090455" OR "20130008478" OR "20140182643" OR "20150167343" OR "20150240513" OR "20170247906" OR "20180155952" OR "20200190844" OR "3559353" OR "3929146" OR "3955328" OR "4373305" OR "4649947" OR "4658560" OR "4689932" OR "4706696" OR "4846204" OR "4886084" OR "4945936" OR "4953329" OR "4995212" OR "5017068" OR "5069572" OR "5159948" OR	(US-PGPUB; USPAT)	OR	ON	ON	2023/04/21 11:00 AM

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		"5394897" OR "5634483" OR "5666986" OR "5943837" OR "6141934" OR "6145525" OR "6223482" OR "6553698" OR "6553699" OR "6758354" OR "6772780" OR "6802329" OR "7131236" OR "7533498" OR "7556054" OR "8082938" OR "8360085" OR "8381454" OR "8448656" OR "8496019" OR "8925565" OR "9103137" OR "9163425" OR "9243423" OR "9243424" OR "9470010" OR "9605441" OR "9631393" OR "9714523" OR "9752345" OR "9869110" OR "D454609" OR "D544941" OR "D652885").pn.					
L4	428	52/18.ccls.	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2023/04/21 11:05 AM
L5	44	("0316859" | "0397535" | "0768335" | "1433490" | "0D78804" | "1737371" | "2001215" | "2290195" | "2365579" | "D187730" | "2931129" | "3019861" | "D204239" | "3423898" | "3564802" | "3685221" | "4083155" | "4335555" | "4516363" | "4610114" | "4622787" | "4648217" | "5297374" | "5542227" | "5655335" | "5950374" | "5966890" | "6067771" | "6199341" | "6519900" | "6568134").pn. OR ("7581358").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/04/21 11:06 AM
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		(PGPB | USPT | USOC).dbnm.	USOCR)				11:07 AM
L7	26	("1347669" | "3014558" | "3090162" | "3092932" | "3206895" | "3591991" | "3653166" | "3788014").pn. OR ("4320603").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/04/21 11:13 AM
L8	20	("3092932").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/04/21 11:14 AM
L9	979	52/90.1.ccls.	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2023/04/21 11:19 AM
L10	955	9 NOT 4	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2023/04/21 11:19 AM
L11	675	52/dig.10.ccls.	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2023/04/21 11:33 AM
L12	674	11 NOT (10 4)	(US-PGPUB; USPAT; USOCR; EPO; JPO)	OR	ON	ON	2023/04/21 11:33 AM
L13	1724	(12 10 4)	(US-PGPUB; USPAT; USOCR; EPO; JPO)	OR	ON	ON	2023/04/21 11:34 AM
L14	287	135/158-160.ccls.	(US-PGPUB; USPAT; USOCR; EPO; JPO)	OR	ON	ON	2023/04/21 11:34 AM
L15	285	14 NOT 13	(US-PGPUB; USPAT; USOCR; EPO; JPO)	OR	ON	ON	2023/04/21 11:34 AM
L16	21	("3006670" | "3018858" | "3026651" | "3114176" | "3201894" | "3392495" | "3407558" | "4026078").pn. OR ("4555878").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/04/21 11:38 AM
L17	45	("2719384" | "3026651" | "3533202" | "3660952" | "3773061" | "3807421" | "3874396" | "3886961" | "3925940" | "4008730" | "4422267" | "4542759" | "4555878" | "4882884" | "4942895" | "5000211" | "5165207" | "5230196" | "5274980" | "5411047" | "5581960" | "5598668" | "D382348" | "5673720" | "5675938" | "5769106" | "D400266" | "D408085" | "6345638" | "6520195" | "6578593" |	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/04/21 11:40 AM

Camel Manufacturing Company, LLC
Case No. PGR2024-00033; Exhibit 1002

		"6708455" | "6766623" | "6832455").pn. OR ("7448400").urpn. AND (PGPB | USPT | USOC).dbnm.					
L18	2063	(12 10 4 16 15 17)	(US-PGPUB; USPAT; USOCR; EPO; JPO)	OR	ON	ON	2023/04/21 11:47 AM
L19	4542	(E04H15/18 OR E04B1/19 OR E04B1/1903 OR E04B7/02 OR E04B7/06 OR E04B7/08 OR E04B7/105 OR E04H15/34 OR E04H15/36 OR E04H15/44 OR E04B2001/1957).cpc.	(US-PGPUB; USPAT; USOCR; EPO; JPO)	OR	ON	ON	2023/04/21 11:51 AM
L20	4242	19 NOT 18	(US-PGPUB; USPAT; USOCR; EPO; JPO)	OR	ON	ON	2023/04/21 11:51 AM
L21	41	("3376879" | "3388711" | "3640296" | "3811454" | "3856029" | "3886961" | "3894766" | "3909993" | "4064663" | "4092992" | "4269210" | "4555124" | "4584800" | "4614451" | "4745936" | "4886084" | "5215109").pn. OR ("5345962").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/04/21 12:13 PM
L22	22	("0630217" | "1541247" | "2573946" | "2840924" | "3998003" | "4232473" | "4371344" | "4583956" | "4701131" | "4705250" | "4717108" | "4731962" | "4934638" | "4997375").pn. OR ("5316483").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/04/21 12:14 PM
L24	35	(building tent canopy shelter) WITH four WITH (side sided) WITH peak	(US-PGPUB; USPAT; USOCR; EPO; JPO)	OR	ON	ON	2023/04/21 12:23 PM
L25	110	(building tent canopy shelter) WITH (intersection intersected intersecting) WITH ridge	(US-PGPUB; USPAT; USOCR; EPO; JPO)	OR	ON	ON	2023/04/21 12:24 PM
L26	67	(building tent canopy shelter) WITH (hub) WITH (peak ridge)	(US-PGPUB; USPAT; USOCR; EPO; JPO)	OR	ON	ON	2023/04/21 12:25 PM

Camel Manufacturing Company, LLC
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L27	21	((US-11280107-B1 OR US-10858856-B1 OR US-D652885-S OR US-7581358-B2 OR US-4320603-A OR US-6129102-A OR US-4555878-A OR US-D732694-S OR US-7448400-B2 OR US-5000211-A OR US-5345962-A OR US-5441069-A OR US-4886084-A OR US-8701357-B2 OR US-8919363-B1).did. AND USPT.dbnm.) OR ((US-20070125410-A1 OR US-20210301551-A1).did. AND PGPB.dbnm.) OR ((US-D204239-S OR US-2931129-A OR US-3092932-A OR US-3090162-A).did. AND USOC.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/04/21 12:46 PM
L28	6526	26 25 24 22 20 18	(US-PGPUB; USPAT; USOCR; EPO; JPO)	OR	ON	ON	2023/05/19 11:42 AM
L29	494	28 AND @pd>"20200421"	(US-PGPUB; USPAT; USOCR; EPO; JPO)	OR	ON	ON	2023/05/19 11:42 AM

PE2E SEARCH - Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
N1	62	(building tent canopy shelter) WITH (hub) WITH (peak ridge)	(US-PGPUB; USPAT)	OR	ON	ON	2023/04/21 01:00 PM
N2	78	(building tent canopy shelter) WITH (intersection intersected intersecting) WITH ridge	(US-PGPUB; USPAT)	OR	ON	ON	2023/04/21 01:00 PM
N3	24	(building tent canopy shelter) WITH four WITH (side sided) WITH peak	(US-PGPUB; USPAT)	OR	ON	ON	2023/04/21 01:00 PM
N4	431	(building tent canopy shelter) WITH rapid WITH deployment	(US-PGPUB; USPAT)	OR	ON	ON	2023/04/21 01:01 PM
N5	0	(building tent canopy shelter) WITH rapid WITH deployment WITH peak	(US-PGPUB; USPAT)	OR	ON	ON	2023/04/21 01:01 PM
N6	593	1 2 3 4	(US-PGPUB; USPAT)	OR	ON	ON	2023/04/21 01:01 PM

Camel Manufacturing Company, LLC
Case No. PGR2024-00033; Exhibit 1002

Bibliographic Data

Application No: 17/886,132

Foreign Priority claimed: ○ Yes ◉ No

35 USC 119 (a-d) conditions met: ☐ Yes ☐ No ☐ Met After Allowance

Verified and Acknowledged: /Robert Canfield/ Examiner's Signature | Initials

Title: SHELTER AND HUB SYSTEM

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
08/11/2022	135	3636	9693-012A-CIPB
RULE			

APPLICANTS

DLX Enterprises, LLC, Eugene, OR,

INVENTORS

Jonathan Urhausen, Eugene, OR, UNITED STATES

Adam Barr, Eugene, OR, UNITED STATES

Donald Bierman, Eugene, OR, UNITED STATES

CONTINUING DATA

This application is a CIP of 17677210 02/22/2022

17677210 is a CON of 16861012 04/28/2020 PAT 11280107

16861012 is a CIP of 16431322 06/04/2019 PAT 10941559

16431322 is a CON of 15639261 06/30/2017 PAT 10309093

15639261 has PRO of 62356793 06/30/2016

FOREIGN APPLICATIONS

IF REQUIRED, FOREIGN LICENSE GRANTED**

08/23/2022

** SMALL ENTITY **

STATE OR COUNTRY

UNITED STATES

ADDRESS

MACCORD MASON PLLC

2733 Horse Pen Creek Road, Suite 101

GREENSBORO, NC 27410

UNITED STATES

FILING FEE RECEIVED

$830

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
17/886,132	08/11/2022	3636	830	9693-012A-CONB	20	3

CONFIRMATION NO. 8474

REPLACEMENT FILING RECEIPT

4678
MACCORD MASON PLLC
2733 Horse Pen Creek Road, Suite 101
GREENSBORO, NC 27410

OC000000057169045

Date Mailed: 05/17/2023

Receipt is acknowledged of this non-provisional utility patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF FIRST INVENTOR, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection.

Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please submit a written request for a corrected Filing Receipt, including a properly marked-up ADS showing the changes with strike-through for deletions and underlining for additions. If you received a "Notice to File Missing Parts" or other Notice requiring a response for this application, please submit any request for correction to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections provided that the request is grantable.

Inventor(s)

Jonathan Urhausen, Eugene, OR;
Adam Barr, Eugene, OR;
Donald Bierman, Eugene, OR;

Applicant(s)

DLX Enterprises, LLC, Eugene, OR;

Assignment For Published Patent Application

DLX Enterprises, LLC, Eugene, OR

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a CIP of 17/677,210 02/22/2022
which is a CON of 16/861,012 04/28/2020 PAT 11,280,107
which is a CIP of 16/431,322 06/04/2019 PAT 10,941,559
which is a CON of 15/639,261 06/30/2017 PAT 10,309,093
which claims benefit of 62/356,793 06/30/2016

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

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Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 08/23/2022

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 17/886,132**

Projected Publication Date: Request for Non-Publication Acknowledged

Non-Publication Request: Yes

Early Publication Request: No

**** SMALL ENTITY ****

Title

SHELTER AND HUB SYSTEM

Preliminary Class

135

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

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Case No. PGR2024-00033; Exhibit 1002

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

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This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

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No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

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community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop technology, manufacture products, deliver services, and grow your business, visit http://www.SelectUSA.gov or call +1-202-482-6800.

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Case No. PGR2024-00033; Exhibit 1002

Electronic Acknowledgement Receipt

EFS ID:	48007592
Application Number:	17886132
International Application Number:	
Confirmation Number:	8474
Title of Invention:	SHELTER AND HUB SYSTEM
First Named Inventor/Applicant Name:	Jonathan Urhausen
Customer Number:	4678
Filer:	Kelly B. Robinson/Nichol Neal
Filer Authorized By:	Kelly B. Robinson
Attorney Docket Number:	9693-012A-CONB
Receipt Date:	16-MAY-2023
Filing Date:	11-AUG-2022
Time Stamp:	10:33:47
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Request for Corrected Filing Receipt	9693-012A-CONB_Corrected_ADS.pdf	2225815 e6a87b97828866267da7deb4d7e962d913bd55a1	no	72

Warnings:

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Case No. PGR2024-00033; Exhibit 1002

Information:	
Total Files Size (in bytes):	2225815

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	9693-012A-CONB
	Application Number	
Title of Invention	SHELTER AND HUB SYSTEM	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

Secrecy Order 37 CFR 5.2:

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Jonathan		Urhausen	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

City	Eugene	State/Province	OR	Country of Residence i	US

Mailing Address of Inventor:

Address 1	1075 Arrowsmith Rd.		
Address 2			
City	Eugene	State/Province	OR
Postal Code	97402	Country i	US

Inventor 2

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Adam		Barr	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

City	Eugene	State/Province	OR	Country of Residence i	US

Mailing Address of Inventor:

Address 1	1075 Arrowsmith Rd.		
Address 2			
City	Eugene	State/Province	OR
Postal Code	97402	Country i	US

Inventor 3

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Donald		Bierman	

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Case No. PGR2024-00033; Exhibit 1002

PTO/AIA/14 (08-15)
Approved for use through 04/30/2017. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	9693-012A-CONB
	Application Number	
Title of Invention	SHELTER AND HUB SYSTEM	

Residence Information (Select One)	◉ US Residency	○ Non US Residency	○ Active US Military Service

City	Eugene	**State/Province**	OR	**Country of Residence** i	US

Mailing Address of Inventor:

Address 1	1075 Arrowsmith Rd.		
Address 2			
City	Eugene	**State/Province**	OR
Postal Code	97402	**Country** i	US

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence Information of this application.**

Customer Number	4678		
Email Address	docketing@maccordmason.com	Add Email	Remove Email

Application Information:

Title of the Invention	SHELTER AND HUB SYSTEM		
Attorney Docket Number	9693-012A-CONB	**Small Entity Status Claimed**	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	31	**Suggested Figure for Publication (if any)**	

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country i

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	9693-012A-CONB
	Application Number	
Title of Invention	SHELTER AND HUB SYSTEM	

Publication Information:

☐	Request Early Publication (Fee required at time of Request 37 CFR 1.219)
☒	**Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	◉ Customer Number	○ US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number	04678		

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix	Remove
Registration Number					
Prefix	**Given Name**	Middle Name	**Family Name**	Suffix	Remove
Registration Number					

Additional Representative Information blocks may be generated within this form by selecting the **Add** button.

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.
When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
	~~Continuation of~~	17/677210	2022-02-22
	Continuation in part of		

Camel Manufacturing Company, LLC,
Case No. PGR2024-00033; Exhibit 1002

PTO/AIA/14 (08-15)
Approved for use through 04/30/2017. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	9693-012A-CONB
	Application Number	
Title of Invention	SHELTER AND HUB SYSTEM	

Prior Application Status	Patented			Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
17/677210	Continuation of	16/861012	2020-04-28	11280107	2022-03-22

Prior Application Status	Patented			Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
16/861012	Continuation in part of	16/431322	2019-06-04	10941559	2021-03-09

Prior Application Status	Patented			Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
16/431322	Continuation of	15/639261	2017-06-30	10309093	2019-06-04

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
15/639261	Claims benefit of provisional	62/356793	2016-06-30

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button.

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX) the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button.

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

Camel Manufacturing Company, LLC,
Case No. PGR2024-00033; Exhibit 1002

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	9693-012A-CONB
	Application Number	
Title of Invention	SHELTER AND HUB SYSTEM	

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

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Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

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Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant 1

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

◉ Assignee	○ Legal Representative under 35 U.S.C. 117	○ Joint Inventor
○ Person to whom the inventor is obligated to assign.	○ Person who shows sufficient proprietary interest	

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor:	

If the Applicant is an Organization check here. ☒

Organization Name	DLX Enterprises, LLC

Mailing Address Information For Applicant:

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Phone Number		Fax Number	
Email Address			

Additional Applicant Data may be generated within this form by selecting the Add button.

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Assignee Information including Non-Applicant Assignee Information:

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Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

If the Assignee or Non-Applicant Assignee is an Organization check here. ☒

Organization Name	DLX Enterprises, LLC

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1	1075 Arrowsmith Rd.		
Address 2			
City	Eugene	**State/Province**	OR
Country i	US	Postal Code	97402
Phone Number		Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button.

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Signature:

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). **However, if this Application Data Sheet is submitted with the INITIAL filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).**

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e. g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Kelly B. Robinson/			Date (YYYY-MM-DD)	
First Name	Kelly B.	Last Name	Robinson	Registration Number	72960

Additional Signature may be generated within this form by selecting the Add button.

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SHELTER AND HUB SYSTEM

Field of the Technology

The present disclosure relates generally to shelters, shelter systems, hub systems for shelters, hub shelters, and more particularly to an improved shelter system, apparatus, kit and methods, for example, for deployable shelter assemblies.

Background

Deployable shelters, tents, rapid-deployment shelters, forts and the like typically include sheets of fabric, or other materials, secured to a frame. Often these units are free-standing or are similarly semi-attached to a ground surface or tangential fixture. In some instances, guy ropes help anchor the unit to a ground surface once the shelter is assembled. Rapid deployment and assembly of such a shelter is often a difficult and demanding task, particularly during emergency situations and in uncertain environmental conditions.

For instance, rapid tactical shelters are used in a variety of demanding on-site scenarios including fire, incident command, communication areas, crime scene investigation, vaccination, military deployment, temporary hospital, and other on-site emergency response spots in a variety of challenging terrains, and environmental conditions. Rapid deployment, with quick and easy set-up and take-down of such units is often beneficial, if not necessary. Deployment situations may be, for example, in extreme heat or cold, during on-going emergencies and in remote locations, making ease of assembly extremely important and transportation of weighted items impractical. Durability of items in such terrain and environmental situations can also be a challenge. Incremental changes to weight, cost, ease of assembly and durability of deployable shelters and related shelter systems can result in large improvements in the field.

Therefore, Applicants desire improved systems, kits, assemblies, apparatus and methods for shelters and hub systems for deployment shelters and it is toward these and other challenges the present disclosure is directed.

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Summary

In accordance with the present disclosure, hub systems for assembly of a shelter frame, and improved shelter systems and assemblies are provided for deployment shelters, shelter hubs, and shelter assemblies and the like. This disclosure provides an improved shelter and shelter hub system that is convenient, efficient, easily portable, reliable, durable, and quick for the user, particularly when used in conjunction with other shelter accessories often used in deployment shelters, for example HVAC, lighting, power cords, interior insulation, etc.

In one embodiment of the present disclosure, a hub for assembly of a shelter may include at least one receiver slot, a receiver sleeve, and at least one attachment point.

Other embodiments may be considered a hub for assembly of a rapid-deployment shelter. The hub may include, in some examples, a set of receiver slots, a receiver sleeve and a set of attachment projections. The receiver slot may include two parallel slot walls, a slot floor and a center slot wall. The receiver sleeve may be medially positioned to the receiver slots. The set of attachment projections may be rounded or may take on other shapes. The set of attachment projections may be attached at each end to a slot wall.

In some embodiments, a receiver sleeve may include an inner receiver and an outer receiver. The inner receiver and outer receiver may form a pressure lock system. The inner receiver and outer receiver walls may be angled. The angle may, for example, be between about .001 and 1 degrees, or is contemplated to also be more. In some examples, the taper may be at .5 degrees. The inner receiver may be angled inwardly from the floor. The outer receiver may be angled outwardly from the floor. In some examples, the taper of the angle of the outer receiver may be opposite that of the taper of the angle of the inner receiver.

Some examples of frame and hub assemblies include a set of hubs and a set of frame poles. In some examples, the frame and hub assembly may include variations of the hub, for example, partial hubs, by way of example, for corners of the frame assembly. Embodiments may include methods for assembly of the frame and hub assembly in which the frame poles are connected through the hubs. In some examples, a hub may be

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placed and oriented top down, bottom down and/or on a hub side to form the frame and hub assembly. There may be a portion of the hubs horizontally oriented in connecting the hubs and a portion of the hubs vertically oriented in the frame and hub assembly. There may be partial hubs included in the frame and hub assembly. Partial hubs may be specialized to accept frame poles in hard to fit positions, for example, in frame and hub assembly corners and/or long frame pole articulations.

In still other examples, the inventions of the present disclosure may be considered a frame for an emergency, rapid-deployment shelter system. The frame may include a set of hubs and a set of frame poles, a portion of the frame poles secured with a portion of the hubs to form a skeleton frame for a rapid-deployment shelter system. The rapid-deployment shelter system may include more than one shelter.

The rapid-deployment shelter system may include more than one shelter mated with other rapid-deployment shelters. A shelter hub may interconnect more than one rapid-deployment shelter.

Other embodiments may be considered a shelter system including a frame, a cover and at least one hub. The frame may include a plurality of interconnected frame poles. The frame poles may be configured to alternate between a first extended position and a second retracted position. The cover may be configured to mate with the frame and/or be secured to the frame. The hub may include a set of receiver slots, a receiver sleeve, and a set of attachment projections.

Some embodiments may include a frame, a shelter, a shelter cover, and shelter accessories.

In other examples the inventions disclosed may be considered hub and shelter methods, for example a method for a hub, a method for a shelter system kit, a method for an improved shelter and a method for rapid deployment of a shelter according to the disclosure.

The above summary was intended to summarize certain embodiments of the present disclosure. Embodiments will be set forth in more detail in the figures and description of embodiments below. It will be apparent, however, that the description of

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embodiments is not intended to limit the inventions of the present disclosure, the scope of which should be properly determined by the appended claims.

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Brief Description of the Drawings

Embodiments of the disclosure will be better understood by a reading of the Description of Embodiments along with a review of the drawings, in which:

Figure 1 is a side perspective view of one example of a hub for a deployment shelter according to an embodiment of the disclosure;

Figure 2 is a front view of a one example of a deployment shelter with a hub system according to an embodiment of the disclosure;

Figure 3 is a top view of one example of a hub according to the present disclosure;

Figure 4 is a top view of one example of a hub according to the embodiment of Figure 1;

Figure 5 is an exploded view of one example of a shelter according to the present disclosure;

Figure 6 is another example of a bottom view of a hub according to the present disclosure;

Figure 7 is a side perspective view of one example of a hub according to the embodiment of Figure 1;

Figure 8 is a side perspective view of one example of a portion of a hub assembly of a hub system according to the present disclosure;

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Figure 9 is a perspective view of another example of a portion of a hub assembly of a hub system, according to the present disclosure;

Figure 10 is a perspective view of one example of a frame and hub assembly of the rapid-deployment frame and shelter system, according to Figure 2;

Figure 11 is a close-up view of one example of the frame and hub assembly according to Figure 10;

Figure 12 is a close-up view of one example of a lower portion of the frame and hub assembly according to Figure 10;

Figure 13 is another opposite side perspective view of one example of the frame and hub assembly according to Figure 10;

Figure 14 is a close-up view of one example of a corner frame and hub assembly showing an example of a partial hub according to Figure 10;

Figure 15 A-G is perspective views of another example of a shelter frame and shelter hub assembly in a first deployed position and a second retracted position, according to the present disclosure;

Figure 16A-B are exploded views of one example of a shelter and shelter frame according to examples of the present disclosure;

Figure 17 is a perspective view of one example of a shelter including a hub;

Figures 18-19 are perspective views of examples of a shelter system according to embodiments of the present disclosure;

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Figure 19A is an enlarged view of one example of a shelter frame of Figure 19, and

Figures 20A-D are perspective views of examples of shelters forming a shelter system according to embodiments of the present disclosure.

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Description of Embodiments

In the following description, like reference characters designate like or corresponding parts throughout the several views. Also in the following description, it is to be understood that such terms as "forward," "rearward," "left," "right," "upwardly," "downwardly," and the like are words of convenience and are not to be construed as limiting terms.

Referring now to the drawings in general, it will be understood that the illustrations are for the purpose of describing embodiments of the disclosure and are not intended to limit the disclosure or any invention thereto. Collapsible shelters generally have a short lifespan as they expand and then collapse into a carryable form repetitively, and generally are thrown about experiencing a significant amount of wear and tear. These types of shelters are often thought of as readily replaceable and priced accordingly. Rapid deployment shelters, however, are much more significant purchases and are used under extreme conditions in emergency deployments, precarious weather situations, in remote locations and are expected to function seamlessly, with higher expectations in repetitive deployments. Applicant realizes that durability, ease of use, strength and weight associated with rapid deployment shelters are extreme challenges and can all be limiting factors. It is to these and other challenges that Applicant's improved hub and shelter system is directed.

Figure 1 shows a side view of one example of a hub 10 for a shelter according to an embodiment of the disclosure. A hub 10 for assembly of a shelter may include at least one receiver slot 12, a receiver sleeve 20, and at least one attachment projection 30. In some examples, at least a portion of the hub 10 is made of glass filled nylon and in other examples; the hub 10 may be entirely made of glass filled nylon. Applicant realized that formulating the hub 10 out of glass filled nylon, for example instead of the traditional metal, could give the hub slightly more flexibility than a metal hub, however, strength and durability were concerns. Applicant's hub 10 may exclude metal parts.

One or more hubs 10 may make up a hub system for a deployment shelter 50, as seen in figures 2 and 5. An articulating frame system of frame poles 52 may mate with,

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provide a skeleton frame for, a shelter cover 56. Shelter covers 56 are often made of a fabric or canvas material that may be torn or ripped during contact with traditional frames, especially those with metal parts and assemblies. Applicant's hub reduces the chances of wear and tear on both the frame and the cover of the shelter. In many cases, when a shelter is expanded, a cover 56 is required to be secured to the frame by way of an attachment strap with an attachment buckle that expands between the cover and the hub. The need for such attachment straps has been eliminated with Applicant's improved hub, in one example, by the hub pressure lock structure, described in more detail later. In some examples, however, attachment straps and/or buckles may be desired and are considered with the scope of the inventions of the disclosure.

Any of the shelters 50 shown or described herein may include a variety of field deployment elements. For instance, the shelter 50 may be light weight for easy carry and transport and may include an articulated frame 72, a robust cover/canopy 56 and covering/canopy features. By way of example, a shelter 50 and/or shelter cover 56 may include, flooring 58, floor liner, end wall 59 and door ends 53, lighting features, power features, electrical supply 78, lighting 71, liners 65, bedding, bunk bedding, tables, shelter identification tags, emergency response equipment, and additional water features and water bladders, an anchor 75 serving as a weight, and/or sand bags. Shelters 50 may include windows 68.

The shelters may be any size and multiple shelters may be joined through door ends 53 and/or end walls 59 to create scalable complexes with the advantages of the inventions herein. Joined shelters may be considered shelter systems 170 including more than one shelter joined at a matched face 100 and include any of the embodiments and features included in the present disclosure. Some shelters 50 may serve as a hub shelter 150 and include scalability of connectivity between two or more shelters.

Particular shelter examples include, but are not limited thereto, a unit with floor space of about fifteen feet by twelve feet and an area of about one hundred and height square feet; a unit with floor space of fifteen feet by eighteen feet and an area of about two hundred and seventy feet; and a variety of other sizes.

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In other embodiments, the disclosure includes a shelter kit. In this embodiment, the kit may comprise at least one shelter 50, e.g., any of the shelters and/or shelter accessories shown or described, and a plurality of hubs 10, e.g., any of the hub embodiments shown or described.

Other embodiments, seen throughout Figures 3-8, may be considered a hub 10 for assembly of a rapid-deployment shelter 50. The hub may include, in some examples, a set of receiver slots 12, a receiver sleeve 20 and a set of attachment projections 30. The receiver slot 12 may include slot walls 14, a slot floor 16 and a center slot wall. The receiver sleeve 20 may be medially positioned to the receiver slots 12. The set of attachment projections 30 may be rounded or may take on other shapes. The set of attachment projections 30 may be attached at each end to a slot wall 14. In some examples, an attachment area 29 may be formed between two slots. The attachment area 29 may have one side forming a substantially right angle, formed by the intersection of two receiver slot walls. Opposite the attachment area side having a substantially right angle, the area 29 may include a rounded surface. An attachment projection 30 may be cornered between two receiver slots 12.

The receiver slot 12 may include a first slot wall 14 and a second slot wall 14, positioned such that the two slot walls are substantially parallel, and each attached to a slot center wall and a slot floor 16. In some examples, a slot wall 14 of one receiver slot 12 is substantially perpendicular to the slot wall 14 of an adjacent receiver slot 14.

In some embodiments, receiver sleeve 20 may include an inner receiver 24 and an outer receiver 22 and a sleeve bottom 26. The inner receiver 24 and outer receiver 22 may form a pressure lock system. The inner receiver 24 and outer receiver 22 walls may be angled. The angle may, for example, be between about .001 and 1 degrees, or is contemplated to also be more. The inner receiver 24 may be angled inwardly from the floor. The outer receiver 22 may be angled outwardly from the floor. The inner receiver 24 and outer receiver 22 walls may be angled away from each other at the top of the receiver 20 and toward each other toward the floor of receiver 20. The angled inner receiver 24 wall and the angled outer receiver wall 22 may form a pressure lock system

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for accepting a frame pole 52, for example and specifically a spacer pole 51, and securing the pole with the hub 10.

Attachment projections 30 may be attached on one end to a slot wall 14 that is perpendicular to the slot wall 14 attached to the other attachment projection end. Attachment projections may be curved, rounded or take on any other applicable shape. Many shelter accessories 60 (see Figure 9) are utilized with rapid deployment shelters, as previously discussed, and these items often need to be attached or secured with the shelter. Such items as HVAC components and insulation sheets can be heavy and place a large weight load on the shelter, especially the shelter frame, and there is traditionally not a good place to attach such items. Applicant's hub system includes attachment projections 30 and a pin system 80 that collectively simplify assembly of the shelter and also provide unique attachment options for accessory items and attachments, without compromising the frame and shelter integrity and without increasing shelter carry weight. Attachment projections 30 secure attachment objects to the frame securely so that the attachment objections do not move along the frame. In some examples, the rounded outer side of projections 30 presents a curved surface for contact with the shelter canopy and other accessory items, preventing wear and tearing that may occur with a non-rounded surface.

The attachment projections 30 are configured to allow shelter accessory 60 attachment with accessory attachments 60.

The hub weight, in some examples, may be less than or equal to about 1.75 oz. The hub weight in other examples may be between about 1.25 oz. to about 1.75 oz. The hub may be at least about 4mm thick. The hub may be at least about 5mm thick in other examples. Applicant was able to realize a reduced hub weight of over 40% of that of conventional hubs, while increasing the strength and durability of the hub 10.

In some embodiments, attachment projections 30 may be about 0.20 to about 0.260 inches in thickness. The attachment projections 30 may be at least 0.250 inches in thickness. The hub base, flooring between the slot walls 14, may be substantially between

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0.150 inches to about 0.200 inches in thickness. The hub base may be at least 0.200 inches in thickness in some examples.

Applicant conducted vertical break testing for the hub to simulate the weight that is often supported from a hanging position on attachment points for rapid deployment shelters by accessory and attachment items. Weight was applied to the hub in increments and increased until vertical break was detected. Applicant desired attachment points with low weight, ease of access, durability and strength. In some examples, hub 10 and the attachment projections 30 may have an average vertical break of above 125 lbs., 145 lbs. or 155 lbs. In some examples, the vertical break may be between about 145 lbs. and about 170 lbs.

Applicant conducted lateral break testing to simulate the side pull that is to be withstood from a side load position. Again, Applicant desired attachment points with low weight, ease of access, durability and strength. Weight was again applied to the hub in increments until vertical break was detected. In some examples, the hub 10 and attachment projections 30 may have an average lateral break of above 150 lbs., 160 lbs., or 170 lbs. In some examples, the lateral break may be between 150 lbs. and about 200 lbs.

Other embodiments may be considered a shelter system 70 including a frame 72, a cover /canopy 56 and at least one hub 10. The frame 72 may include a plurality of interconnected frame poles 52. The frame may include a connector 57. The connector 57 may span between the front right and front left corners of the frame. The connector 57 may also span between the back left and back right corners of the frame. The connectors may be frame poles 52, straps, elastic, nylon or any other suitable material. The connectors may stabilize the frame. The connectors may be a set of connectors joined end to end. The connectors may be frame base connectors. The frame poles 52 may be configured to alternate between a first extended position and a second retracted position. The retracted positon may include just the frame poles 52 in a retracted position, the frame poles 52 and the hubs 10 in a retracted position, and/or the frame poles 52, hubs 10 and the canopy 56 in a retracted position, assembled and/or unassembled for storage and

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transport. The entire shelter system may fully retract in a second position and fully expand without assembly into a first deployed position. The cover 56 may be configured to mate with the frame 72 and/or be secured to the frame or may be already mated with the frame. The hub 10 may include a set of receiver slots 12, a receiver sleeve 20, and a set of attachment projections 30.

In one embodiment, a shelter 50 may include a frame 72 and a cover 56. The cover may include at least two end walls 59a joined with at least two side walls 59b and a roof 59c. The end walls 59a may be removable and/or retractable. End walls 59a may be attached to the side walls 59b, for example, by Velcro, zipper, hooks, buttons, ties, a combination of these, and/or any securing means. The end wall 59a may include a door end 53. Door end 53 may be removable and/or may be retractable. The roof 59c may mate with the side walls 59b. The roof may include a peak in the roofline that runs along the length of the cover and angles downwardly on each side of the peak toward an interface of the roof and each side wall. A side wall 59b may include one or more window 68. An end wall may include one or more window 68. A side wall 59b may include an access panel 67. End wall 68 may include one or more access panel 67. Access panel 67 may be, in one example, an HVAC access panel adapted to incorporate an HVAC system into the shelter 50.

The shelter 50 may include an insulation liner 65. The insulation liner may include windows 68. The windows 68 of the insulation liner may align with the shelter windows in the cover 56. Insulation liner 65 may include an access panel 67. The access panel 67 in the insulation liner 65 may align with an access panel 67 in the side wall 59b. The insulation liner 65 may be aligned with and attached to the frame 72. The frame 72 may support insulation liner 65. As seen in Figure 9, insulation liner may attach to frame 72 and hang supported by way of frame 72. In some examples, the insulation liner 65 may attach to a hub 10 in the frame 72 by way of attachment to an attachment projection 30.

The shelter system 50 may include lighting 71 for the shelter. The shelter system 50 may include an electrical supply 78 for the shelter.

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In some embodiments the pin system 80 may include a plurality of pins and matched washers. Applicant's pin system, as seen in Figures 5 and 7, may fit through slot openings 17 on slot receiver walls 14 to secure in place attachments and/or frame poles 52. Once a frame pole 52 is mated with a hub 10, the pole 52 may be secured movably to the hub 10 with a pin system 80 with a washer 89 and pin 86. Applicant's articulating frame poles 52 and configuration may include openings that accommodate and match with the openings 17 and the pin system 80. By way of example, the pin 86 and washer 89 may be made of glass filled nylon able to remain durable and also light weight and easy to repeatedly remove and replace into position. In this example, the pin 86 is configured to slide through the hub and tubes of the frame and to mate with its mated washer that is configured to pop over the end of the pin to lock tight. Conventionally, metal pins with split rings have been utilized with shelters, with the split rings being difficult to remove and assemble quickly and extremely difficult to replace in the field. Applicant's pin system increases ease of assembly and removal, maintains strength and decreases weight load. Applicant's pin system is economical, durable and reduces the time for assembly and/or repair of the shelter system.

Figures 10-14 show examples of a shelter system, one example including frame and hub assemblies, 70. A frame and hub assembly may include a set of hubs 10 and a set of frame poles 72. In some examples, the frame and hub assembly may include variations of the hub, for example, partial hubs 63, by way of example, for corners of the frame assembly. Embodiments may include methods for assembly of the frame and hub assembly in which the frame poles are connected through the hubs. In some examples, a hub may be placed and oriented top down, bottom down and/or on a hub side (seen in Figure 12) to form the frame and hub assembly. There may be a portion of the hubs horizontally oriented in connecting the frame poles and a portion of the hubs vertically oriented in the frame and hub assembly. There may be partial hubs included in the frame and hub assembly. Partial hubs 63 may be specialized to accept frame poles in particular hard to fit positions, for example, in frame and hub assembly corners and/or long frame pole articulations.

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In still other examples, the inventions of the present disclosure may be considered a shelter and frame for an emergency, rapid-deployment shelter system. The frame may include a set of hubs 10 and a set of frame poles 52, at least a portion of the frame poles secured with a portion of the hubs to form a skeleton frame for a rapid-deployment shelter system. The shelter and frame for an emergency, rapid-deployment shelter system fully assembled and movable between a first deployed position and a second retractable position. In the retracted position, the canopy, 56, frame poles 72 and hubs 10 may stay substantially attached with the frame poles 72 collapsing parallel and next to each other. The frame poles 72 may be internal poles, external poles and ceiling poles. Frame poles 72 may, for example, be in pairs 77. The poles in pairs may be connected at about a center point and the poles may retract to be parallel in the same plane. The poles in pairs may be connected at about a center point and the poles may rotate about an axis A (Figure 10, 13) at the connected point to diverge at their ends away from each other. The connected poles may diverge at an angle alpha. The angle alpha may be about 1 to less than 90 degrees. The angle alpha may, by way of example, be about 5 to about 25 degrees.

As seen in Figure 11, the frame poles 52 may link with the hubs 10 to form frame 72. Attachment projections 30 are configured to accept attachment items.

Figure 12 shows a vertically aligned hub 10. Vertically aligned hubs 10 within the frame 72 may, as shown in Figure 12, configure a space into the frame system and act as a spacer between two surfaces. The lower frame poles 52 in this example connect with a receiver slot 12 on a hub, thus the hub acting as a spacer to maintain a space between at least a portion of the lower frame poles 52 and the ground. In this instance, the space 73 is beneficial and allows portions of the canopy to wrap under the frame 70, and in some examples, without supporting weight.

Figures 15A-G show a shelter system 70 in a retracted position (Figure 15A). The shelter system may include a case 85. The case 85 may be a tough and durable material, for example, a vinyl material. The shelter may be encased in the cover for transport and storage. In use, the case is removed, and a liner may be included. In this example, the

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liner is removed. The shelter legs are bunched together in a substantially parallel position in the retracted position (Figure 15B). A user may determine the end wall 59a and the side wall 59b of the retracted shelter. An end wall 59a may have at least 5 associated frame legs and a side wall of the shelter may have less than 5 associated legs. The shelter may be staged in its desired location. Expansion bars may be located within the frame, for example, top center bars of each wall, to be grasped and pulled apart, away from the retracted shelter on each wall end. The shelter may best, by way of example, move into the deployed position by raising the shelter slightly off the ground as the expansion bars are pulled outwardly as the articulating frame expands (Figure 15C). The user lifts at the center point of each door end at the front and back of the shelter and the frame lifts into place, self-standing and fully deployed (Figure 15D, 15G). A floor 58'/floor liner 58 may be added to the shelter or may be included (Figure 15F). The floor 58 may be aligned to meet the shelter canopy side walls 59b and end walls 59a. An insulation liner 65 may be attached at the projections 30.

Other accessory items may be added to the system 70, by way of example, there may be an access panel 68, by way of example, an HVAC access panel, in the canopy at which point an HVAC duct is placed and secured in order to attach to an HVAC system. In other examples, lighting 71, power, and supplies may also be added to the shelter system. Access panels may provide interior access to units such as HVAC units that are located exterior to the shelter but are attached to interior accessories.

In other embodiments, the inventions of the present disclosure may be considered a shelter and frame for an emergency, rapid-deployment shelter system 170. A shelter 50 may include an end wall 59 including a framework, the frame 72 forming a frame end 110 at the end wall 59. As seen in Figures 2, 16A, and 18, and exploded in Figure 16B. The frame end 110 may include angles alphaA at the corners of the shelter. The angles alphaA may, in some examples include upper angles of greater than 90 degrees. In some examples, the alphaA angles in the upper angles of the shelter may between 90 degrees and 150 degrees. In some examples, the upper angles may more specifically be all above 125 degrees. Still, in other examples, the upper angle 72b may be greater than upper

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angles 72a and 72c. Upper angle 72b may be in some examples between 130 degrees and 145 degrees, and preferably in some examples between 135 and 140 degrees. Angles 72a and 72c may in some examples include an angle of between 125 degrees and 135 degrees, an in some examples preferably between 128 degrees and 132 degrees. Angles at legs 72d and 72e may be angles of less than angles 72a and 72c. In some embodiments, angles 72d, 72e may be between 65 degrees and 75 degrees, and more specifically in some examples, between 70 degrees and 74 degrees.

More than one shelter may be assembled frame end to frame end to form a scalable shelter complex. In this example, as shown in Figures 18 and 20A-D, one shelter having a frame end 110 may mate directly with another shelter having a frame end 110, ultimately interfacing the side walls of each shelter one with another with the end walls 59a of each removed to make a continuous inner space between the two joined shelters. In one embodiment, the two shelters, both including the frame ends may mate directly between the two frame ends 110, without requiring a vestibule or smaller opening structure between the two frame ends 110. A shelter attachment 140 may mimic the end wall 59 frame dimension and fit with the adjoining shelters to direct a water flow away from the frame ends 110 where they connect, and direct it, as a gutter away from the shelter system, see Figure 19. In some examples, the shelter attachment 140 may assist in making a substantially waterproof connection site between two adjoining shelters.

In other examples, a shelter may include more than one end wall 59. A shelter with more than one end wall 59 may, in some example be a hub shelter 150, allowing the attachment of more than one additional shelters, and in some cases up to four additional shelters for form a shelter system 170 adaptable as a shelter complex. The hub shelter 150 may include, in some embodiments two additional end walls 59a in place of or incorporated into the side wall/s 59b. As shown in Figures 20A-D this configuration allows the hub shelter 150 to adjoin with other shelters, with end walls removed, without a narrowing opening between the two shelters. The hub shelter 150 also is adaptable to accommodate at least four shelter attachments to the shelter hub 150. The shelter hub 150 may include four frame ends 110 that each mate with shelters having a frame end 110.

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The hub shelter 150 may include a larger surface area along the end wall 59, while still mating to a frame end 110 to the frame end 110 of the adjoining shelter 50. The hub shelter 150 may include other configurations of frame end openings, including a rounded opening by way of example and mate with an adjoining shelter 70 including a frame end opening with the same dimensions so that the two shelters 150, 70 mate without a narrowing in the opening between the two shelter frame end openings. The hub shelter may include corners 112. The corners 112 may project between the shelters 50 adjoining the shelter hub 150 at the frame end openings and in the cover 56.

Figures 19 and 19A show one example of a frame of hub shelter 150 for supporting the shelter. The frame 72 may include a frame front end 172a, a frame back end 172d, a frame side 172b, and a frame opposite side 172c. The frame 72 may in this example be a four-sided shelter frame including frame corners 112a offset between each of the shelter sides, frame ends. The frame configuration, in some examples, may be the same on each of the frame front end, the frame back end, the frame side, and/or the frame opposite end. The frame front end 172a, frame back end 172d, frame side 172b and frame opposite side 172c may each include a first upper frame pole 52a and a second upper frame pole 52b. The first upper frame pole 52a and the second upper frame pole 52b may be joined at peak 152. Each end and side may include a peak 152. The frame may include a first leg pole 52c supporting the first upper frame pole and a second leg pole 52d supporting the second upper frame pole. There may be a shoulder 153 formed between each upper frame pole and each attaching leg pole and a shoulder 153 formed between each second upper frame pole and each attaching second leg pole. A center frame assembly 174 may include a set of extension poles 52e that extend outwardly from a center point of the center frame assembly to one of the frame peaks 152. A frame corner 112a may be formed between the frame front end 172a and each of the frame sides 172b, 172c, and the frame opposite side 172d. A frame corner 112a may be formed between the frame back end 172d and each of the frame side 172b, and the frame opposite side 172c.

A shoulder support 176 may extend between adjacent shoulders 153 of each corner 112a. The frame corners 112a may be offset from the frame sides. The frame

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corners 112a may, as shown, have a face that extends in a different plane than a plane formed by the face of the frame ends or sides 172. The frame corners may include a shoulder support 176 and two frame legs 52. The legs 52 may be, in some instances, a leg from a frame side and a leg from a frame end.

Supports 178 may be located, by way of example, between an extension pole 52e and either a frame front, frame back, frame side, or frame opposite side. Supports 178 may extend to an upper frame pole 52a or a second upper frame pole 52b.

Frame legs may extend from a shoulder 153 downward toward a footing 179 that supports the leg on a ground surface. Legs forming a corner 112a may angle toward one another and meet at a ground surface. Legs 52c, 52d may be distanced apart by a shoulder support 176 at a distance greater than they are from one another at the footings 179. The frame corner 112a may space apart a frame end and a frame side. Each frame end and each frame side may be flanked by a frame corner 112a. The frame poles 52 may be articulating frame poles that move about an axis joint where one pole attaches to another pole.

In other examples the inventions disclosed may be considered hub and shelter methods, for example a method for a hub, a method for a shelter system kit, a method for an improved shelter and a method for rapid deployment of a shelter according to the disclosure.

In yet another embodiment of the disclosure, included is a method for assembling a collapsed shelter 10 and securing the shelter 10 with a hub system according to any of the examples disclosed. In one example, the method may include carrying the shelter 10 collapsed, separating and/or unfolding the walls 12, expanding the shelter 10, aligning the frame of the shelter with a hub system to secure the shelter, e.g., including any of the embodiments previously shown or described. The method may also include attaching accessory items to an attachment projection 30 of a hub 10.

Portability of the shelter allows any of the shelter embodiments and examples shown and described herein to be transported to remote and difficult to reach locations, for instance because the hub and shelter components are lightweight to carry and

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collapsible. Often, in rapid deployment situations, shelters may be quickly set-up in a variety of environments, quickly taken-down and remain easily mobile.

Those of ordinary skill in the art having the benefit of this disclosure will recognize that any of the shelters and hub system described herein includes a variety of sizes, shapes, styles and support materials, all of which are considered within the scope of this disclosure.

Numerous characteristics and advantages have been set forth in the foregoing description, together with details of structure and function. Many of the novel features are pointed out in the appended claims. The disclosure, however, is illustrative only, and changes may be made in detail, especially in matters of shape, size, and arrangement of parts, within the principle of the disclosure, to the full extent indicated by the broad general meaning of the terms in which the general claims are expressed. It is further noted that, as used in this application, the singular forms “a,” “an,” and “the” include plural referents unless expressly and unequivocally limited to one referent.

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We Claim:

1. A rapid-deployment hub shelter comprising:

a frame for supporting the shelter, the frame including a frame front end, a frame back end, a frame side, and a frame opposite side,

the frame front end, frame back end, frame side and frame opposite side each having:

a first upper frame pole and a second upper frame pole, the first upper frame pole and the second upper frame pole joined at peak,

a first leg pole supporting the first upper frame pole and a second leg pole supporting the second upper frame pole,

a shoulder formed between each upper frame pole and each attaching leg pole,

a shoulder formed between each second upper frame pole and each attaching second leg pole,

a center frame assembly having a set of extension poles that extend outwardly from a center point to each frame peak,

a corner formed between the frame front end and each of the frame side, and the frame opposite side, and

a corner formed between the frame back end and each of the frame side, and the frame opposite side.

2. The rapid-deployment shelter of claim 1 including a shoulder support extending between adjacent shoulders of each corner.

3. The rapid-deployment shelter of claim 2 wherein each corner is a triangular shaped corner.

4. The rapid-deployment shelter of claim 2 wherein each corner is set on a different plane than each frame front end, frame back end, frame side, and frame opposite side.

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5. The rapid-deployment shelter of claim 2 wherein each corner includes a shoulder from either the front end or the back end and a shoulder from either the side or the opposite side with a shoulder support extending between.

6. The rapid-deployment shelter of claim 5 wherein each corner includes a leg from either the front end or the back end and a leg from either the side or the opposite side.

7. The rapid-deployment shelter of claim 6 wherein the center assembly interconnects the front end, back end, side and opposite side of the shelter frame.

8. The rapid-deployment shelter of claim 7 having a peak formed along each of the front end, back end, side and opposite side.

9. The rapid-deployment shelter of claim 8 including a set of supports, with one support extending between each extension pole to an upper frame pole and one support extending between each extension pole to a second upper frame pole.

10. The rapid-deployment shelter of claim 8 wherein each leg forming a corner meets one with another at each leg footing.

11. The rapid-deployment shelter of claim 8 where the distance between each leg forming the corner narrows between the shoulders of the corner and the leg footings.

12. The rapid-deployment shelter of claim 1wherein each of the frame front end, back end, side and opposite side is adapted to provide an opening for mating with another shelter.

13. The rapid-deployment shelter of claim 1 including an angle alpha between the upper frame pole and the leg pole and between the second upper frame pole and the second leg pole.

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14. The rapid-deployment shelter of claim 1 wherein each corner separates adjacent shoulders of a frame end and a frame side.

15. A rapid-deployment hub shelter comprising:

a four-sided shelter frame including frame corners offset between each of the shelter sides,

a shoulder support in each corner and extending between each of the adjacent shelter sides,

a set of upper frame poles on each side of the four-sided shelter frame that mate to form a central peak along each shelter side,

a central frame assembly having extension poles that extend from the central frame assembly to each peak along each shelter side,

wherein each of the shelter sides have the same frame dimensions.

16. The rapid-deployment shelter of claim 15 wherein the set of upper frame poles each terminate at frame shoulders that are separated by the shoulder support.

17. The rapid-deployment shelter of claim 16 including footers that mate one with another at a ground surface to secure the frame corner.

18. The rapid-deployment shelter of claim 17 wherein each corner includes a set of legs that supports one of the frame sides.

19. The rapid-deployment shelter of claim 18 wherein each of the set of legs define a distance that narrows between the shoulder support and each of the leg footings.

20. The rapid-deployment shelter of claim 19 wherein the four-sided shelter frame is adapted to alternate between a collapsible position and a deployed position.

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Abstract

A shelter system is shown and described. A hub for a shelter system is shown and described. A frame for a shelter system is shown and described. In one embodiment, the shelter system includes a frame and cover. The shelter may include a hub system. The frame may be collapsible. The cover is configured to fit with the frame. The hub may include a receiver slot, a receiver sleeve and an attachment projection. The result is a shelter system with reduced set up time, effort and requirements and improved strength and ease of use. The inventions may also be considered a shelter kit and/or a shelter and hub method.

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DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	SHELTER AND HUB SYSTEM

As the below named inventor, I hereby declare that:

This declaration is directed to:

- ☐ The attached application, or
- ☒ United States application or PCT international application number 15/639261 filed on June 30, 2017.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

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LEGAL NAME OF INVENTOR

Inventor: Jonathan Urhausen X Date (Optional): 09/14/17

Signature: X

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LEGAL NAME OF INVENTOR

Inventor: Adam Barr X Date (Optional): 9/14/17

Signature X Adam Barr

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The above-identified application was made or authorized to be made by me.

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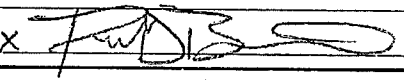
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LEGAL NAME OF INVENTOR

Inventor: Donald Bierman X Date (Optional): 9/14/17

Signature: X 

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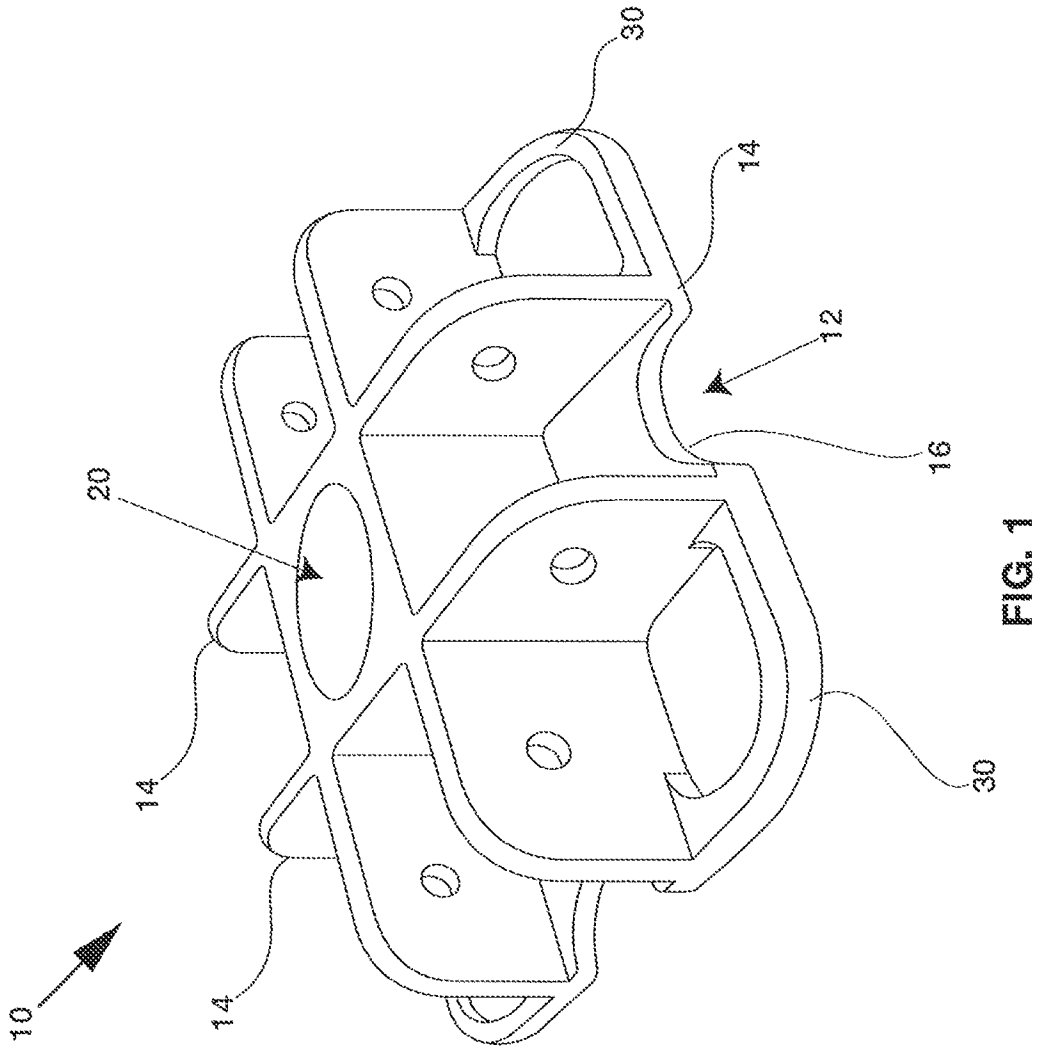


FIG. 1

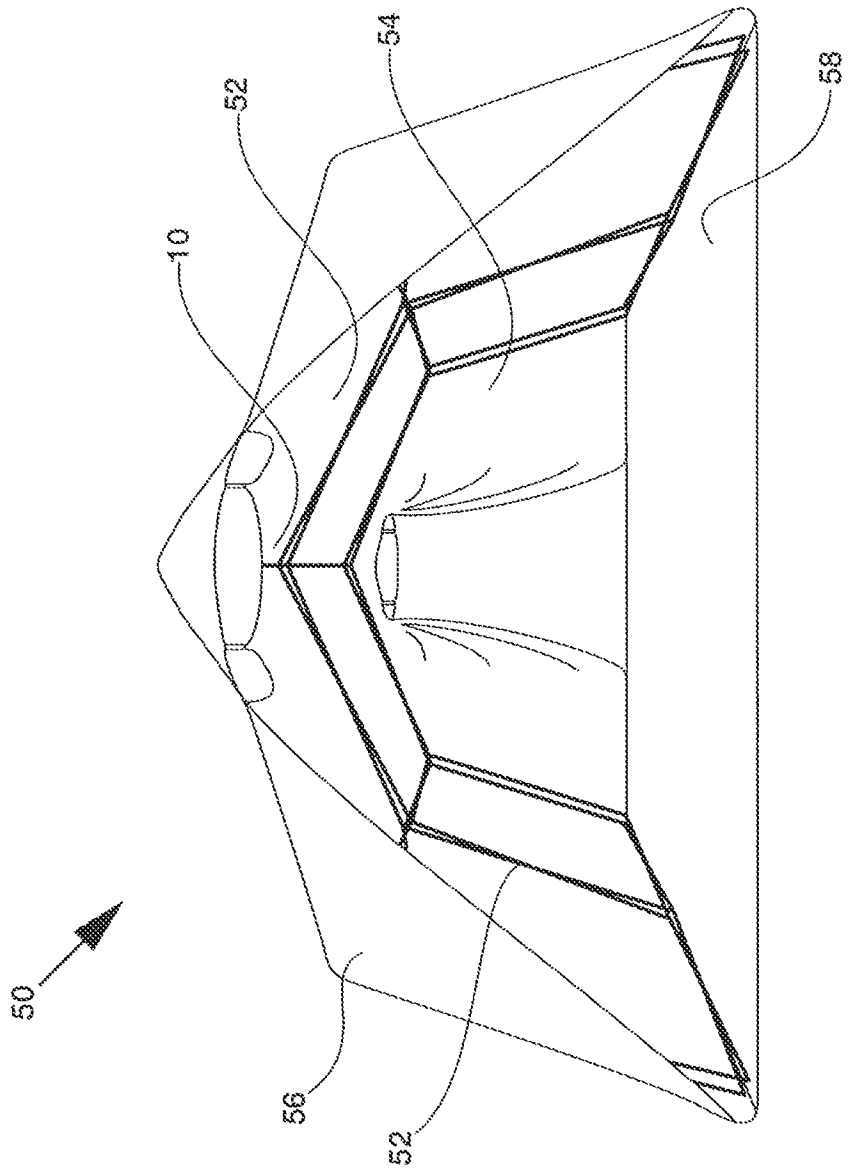


FIG. 2

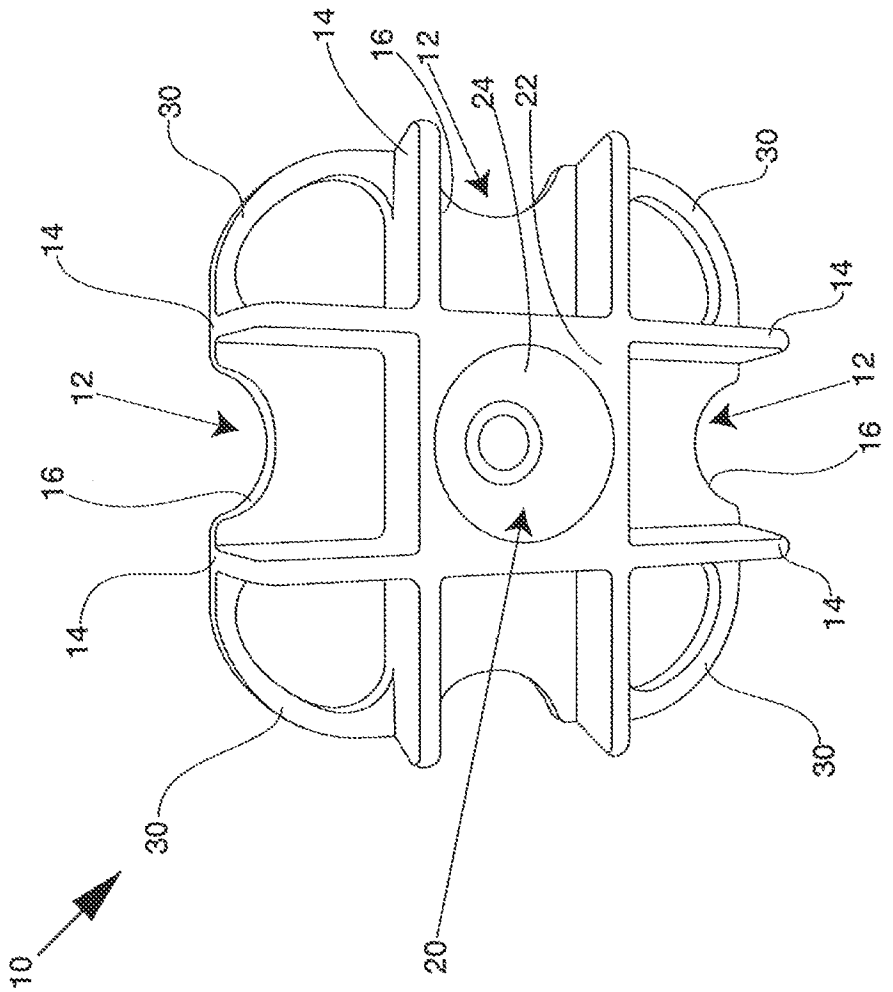


FIG. 3

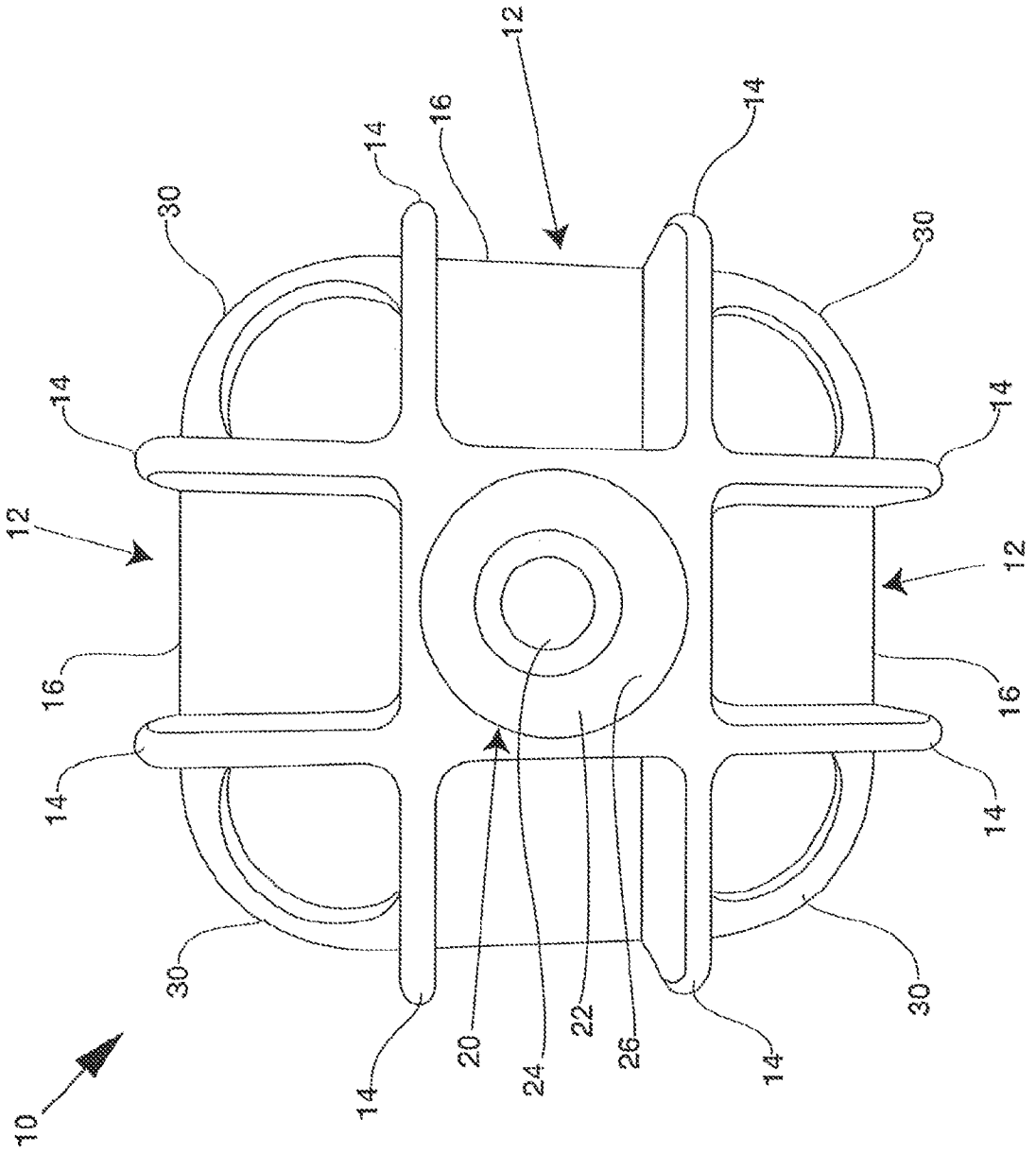


FIG. 4

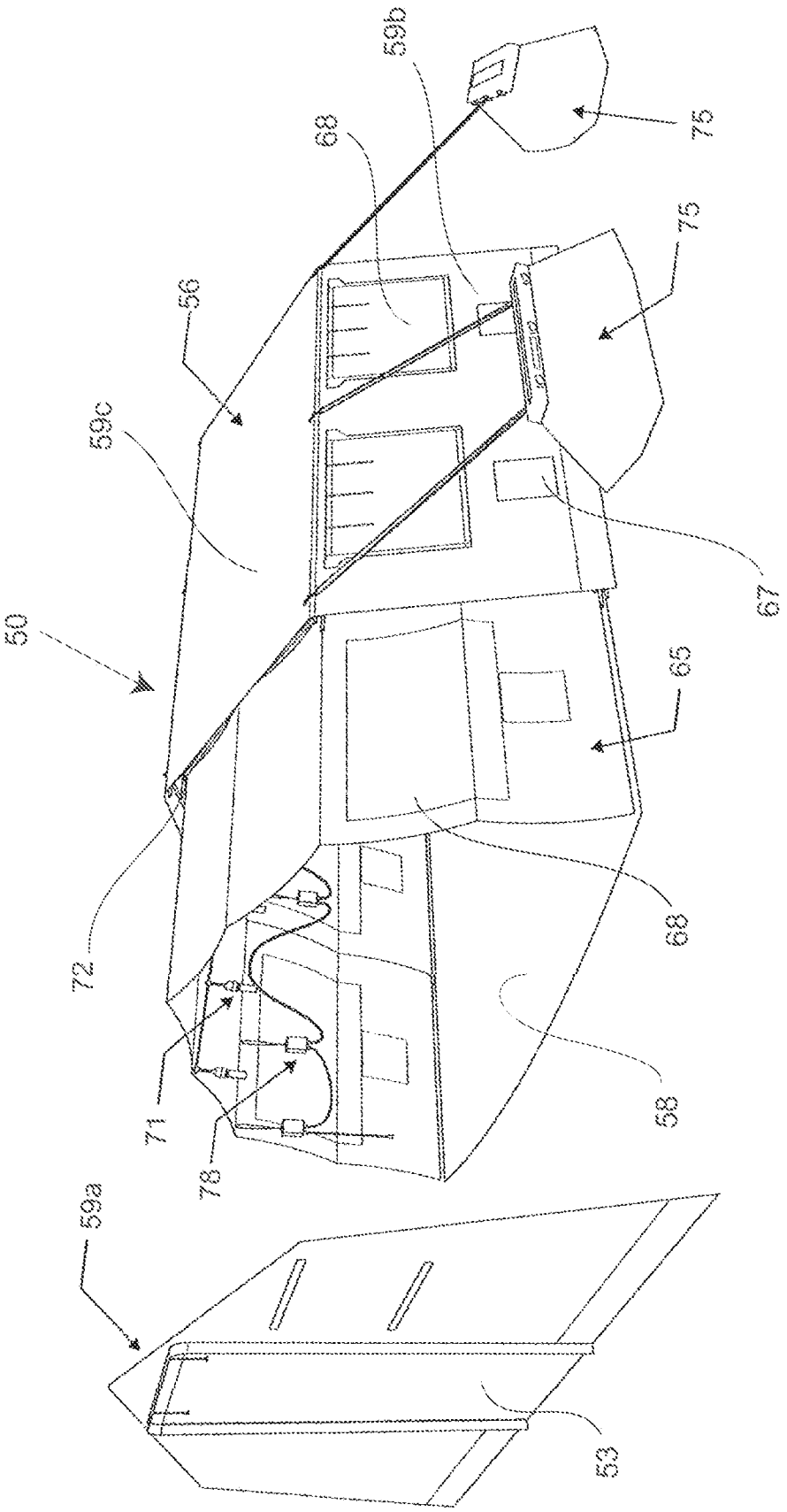


FIG. 5

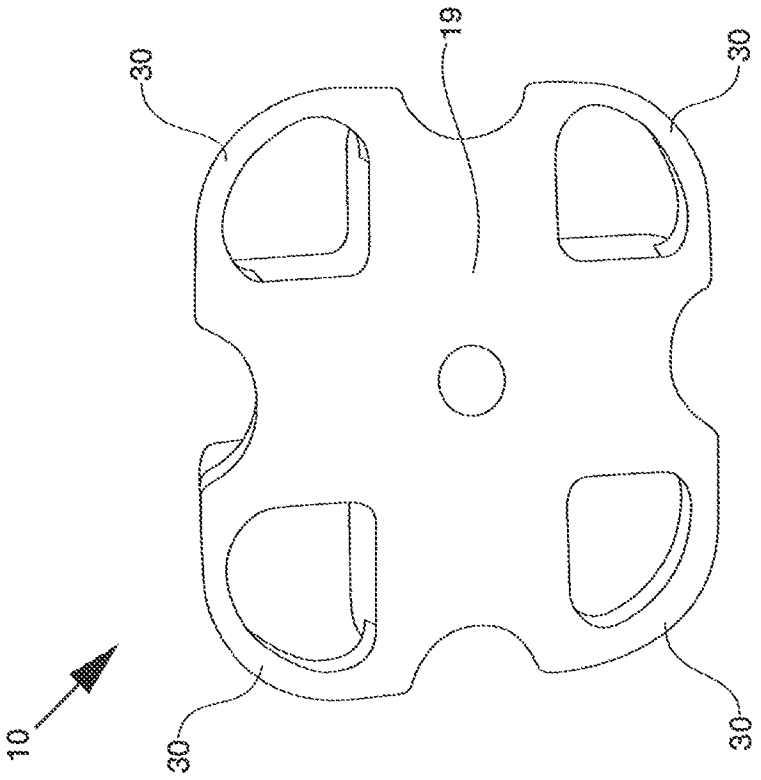


FIG. 6

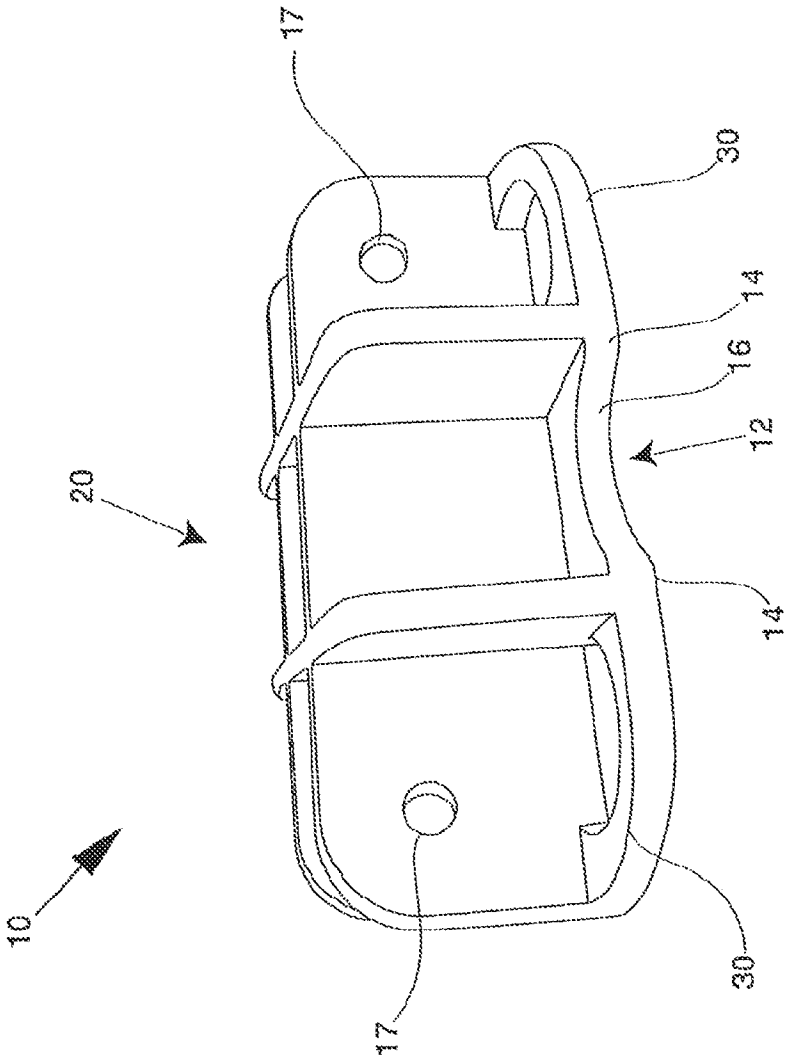


FIG. 7

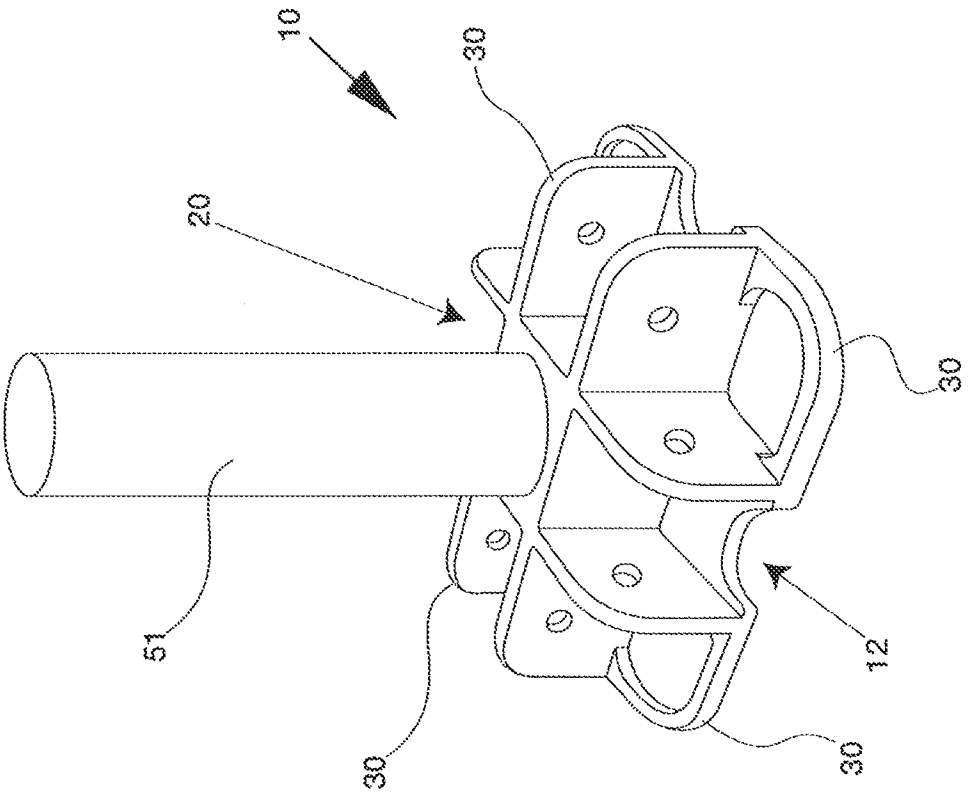


FIG. 8

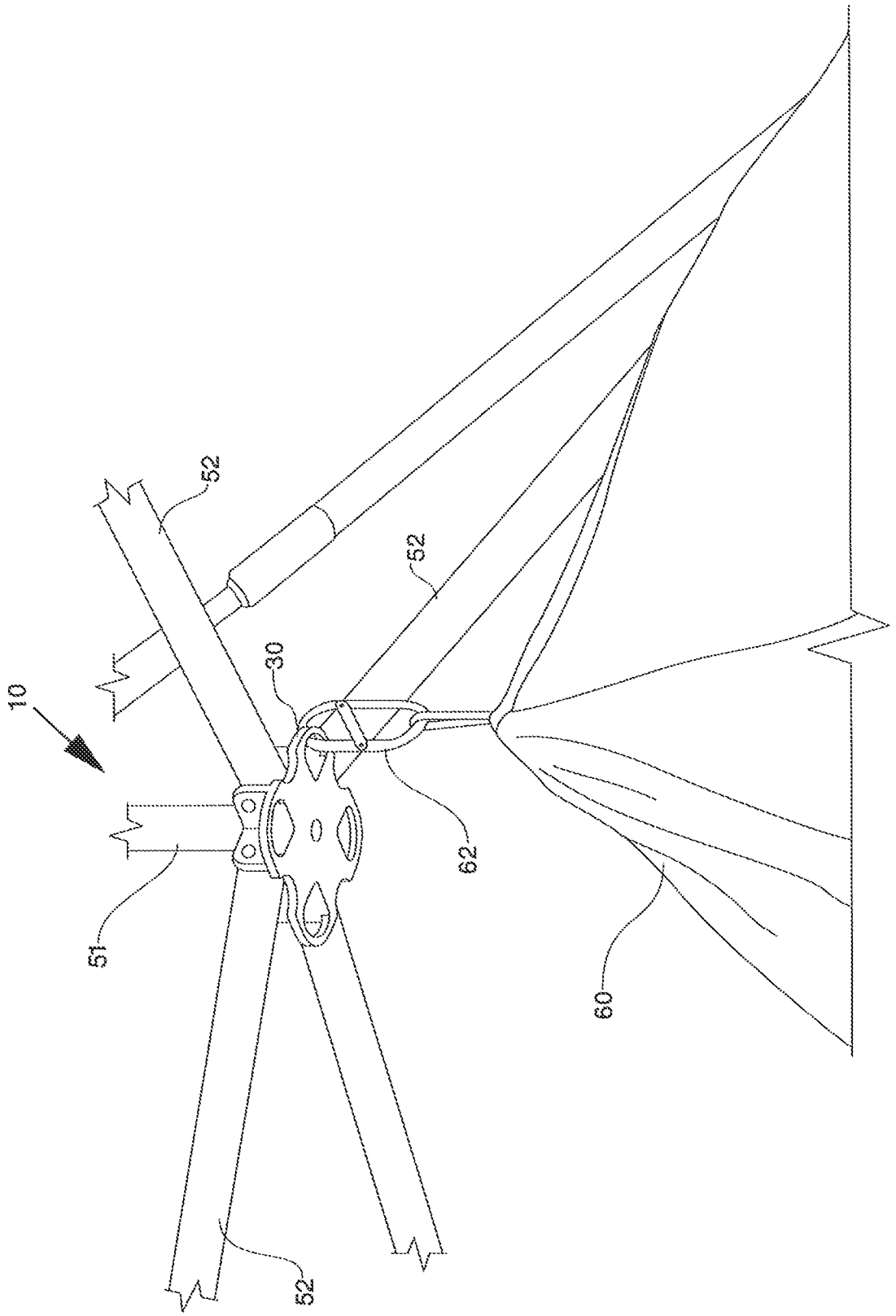


FIG. 9

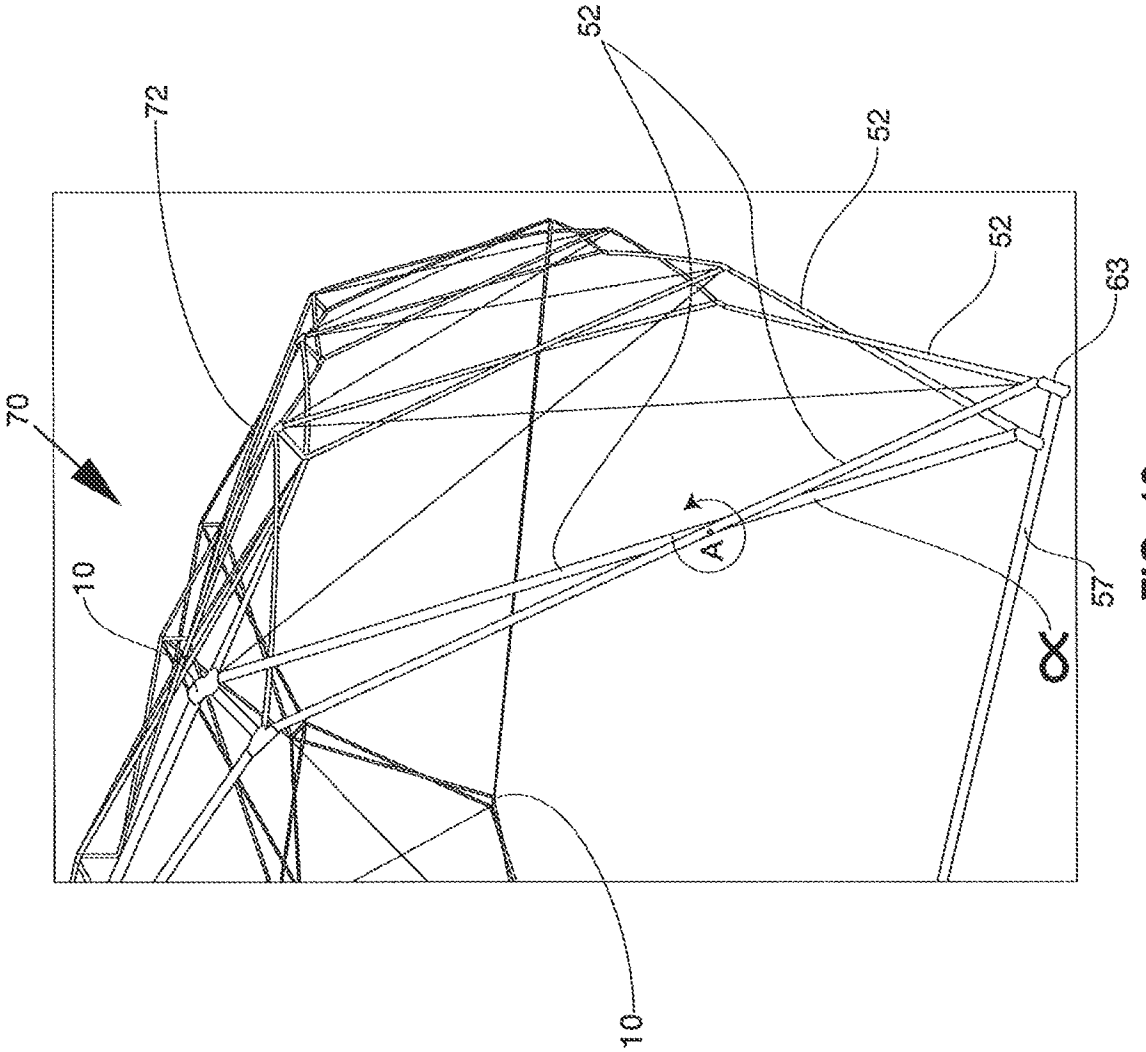


FIG. 10

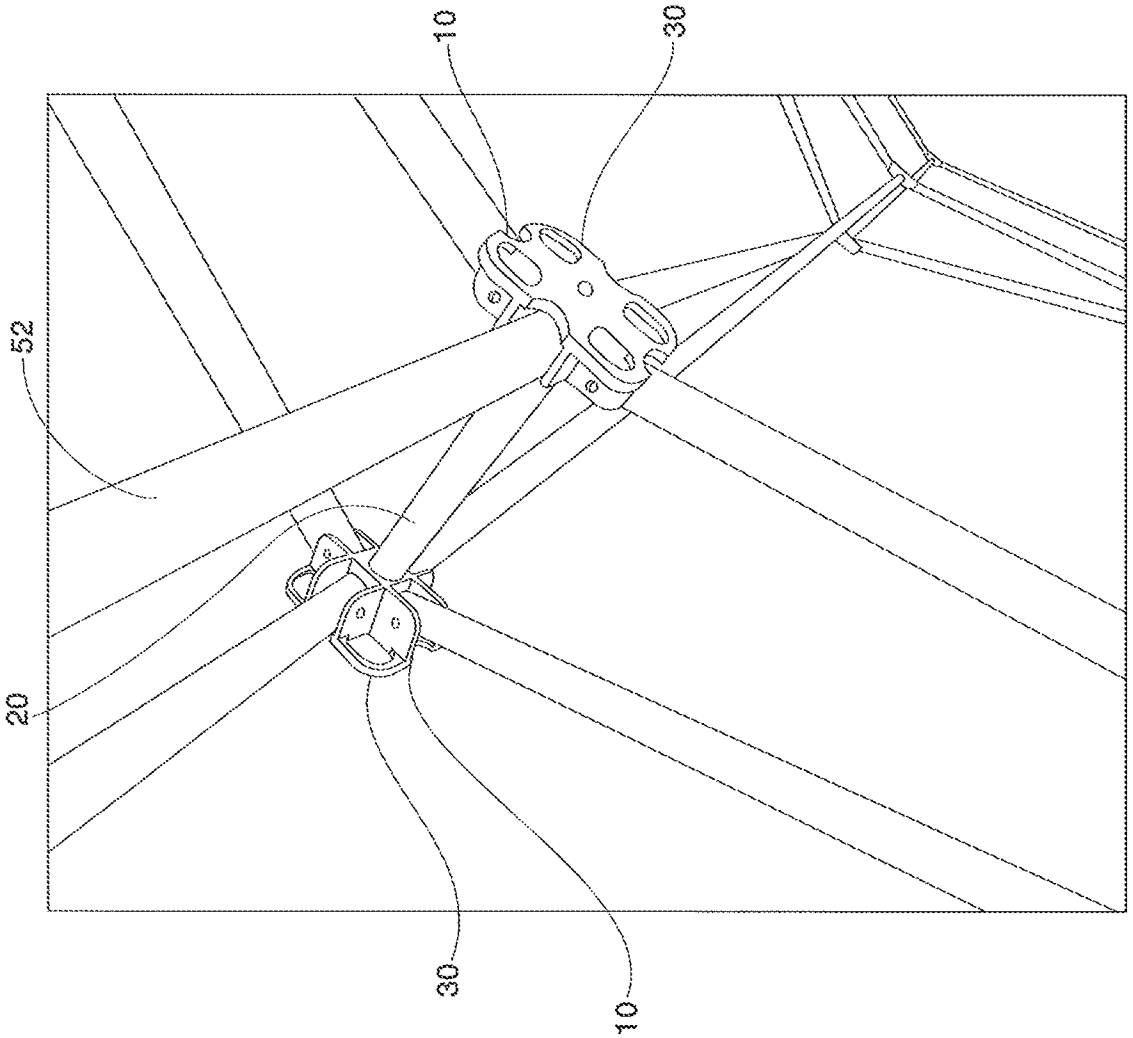


FIG. 11

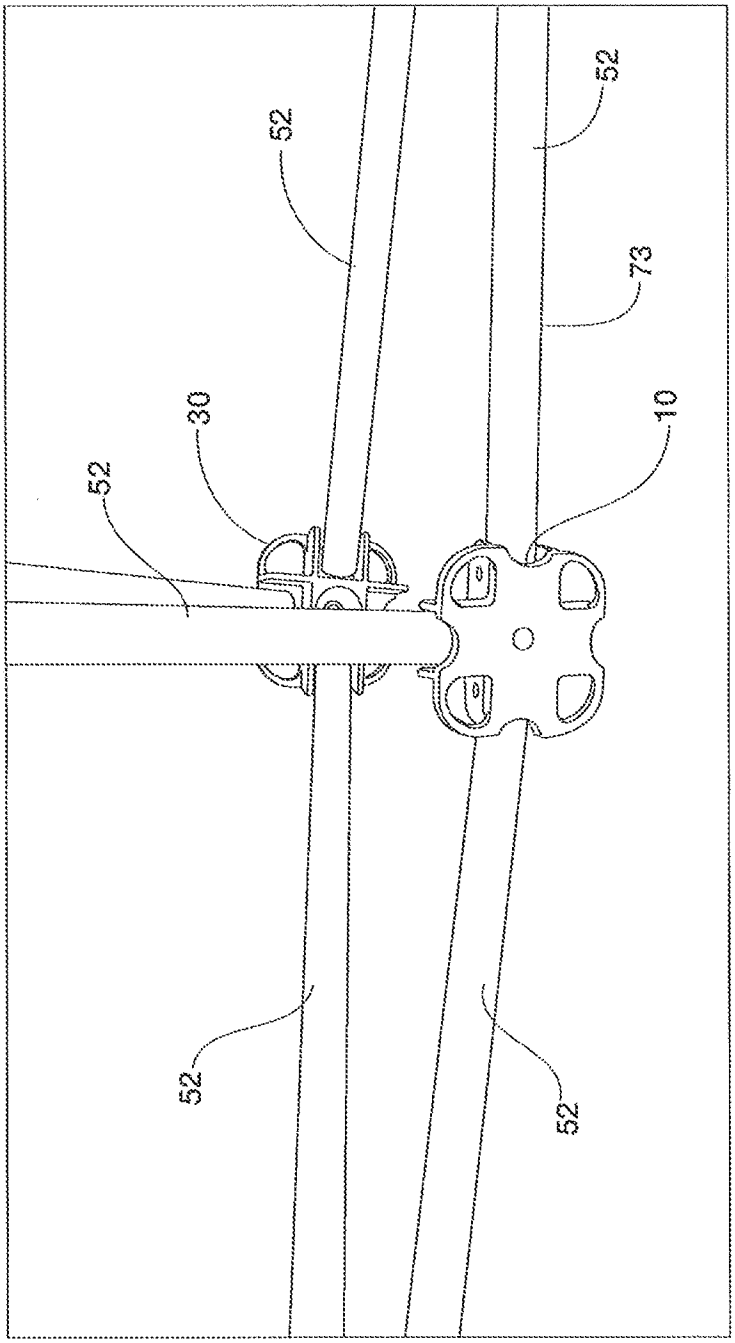


FIG. 12

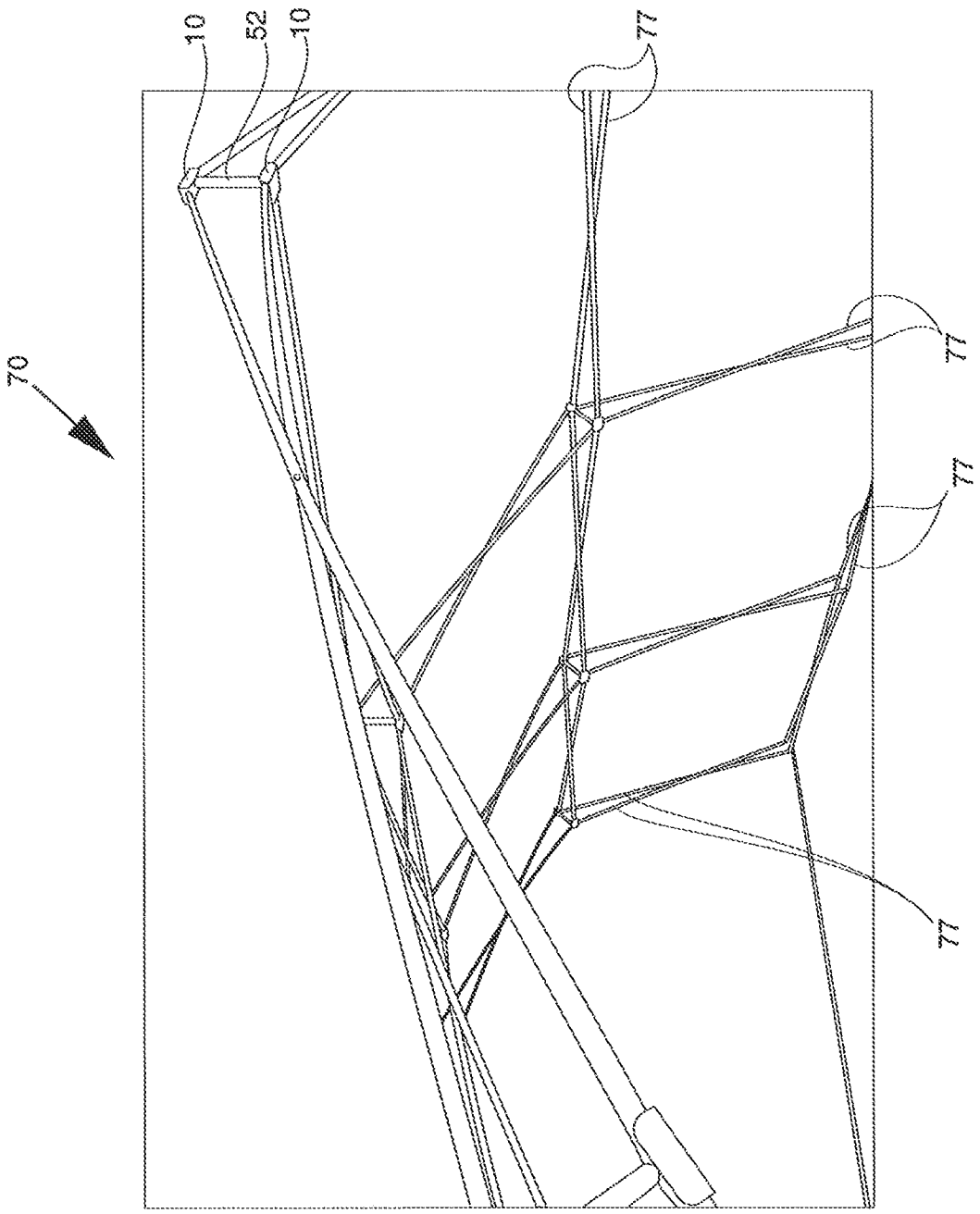


FIG. 13

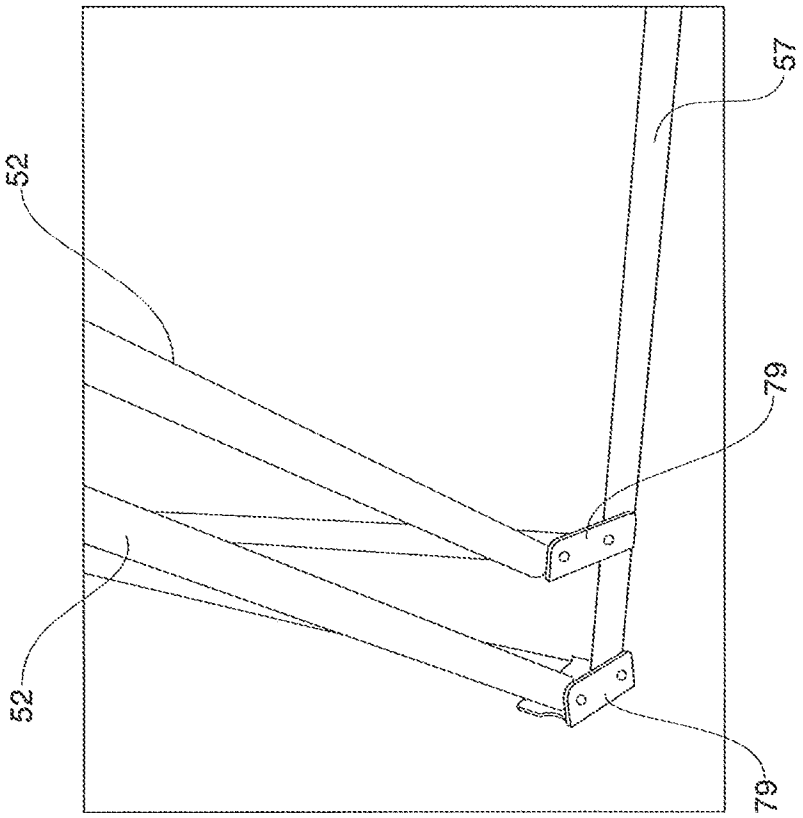


FIG. 14

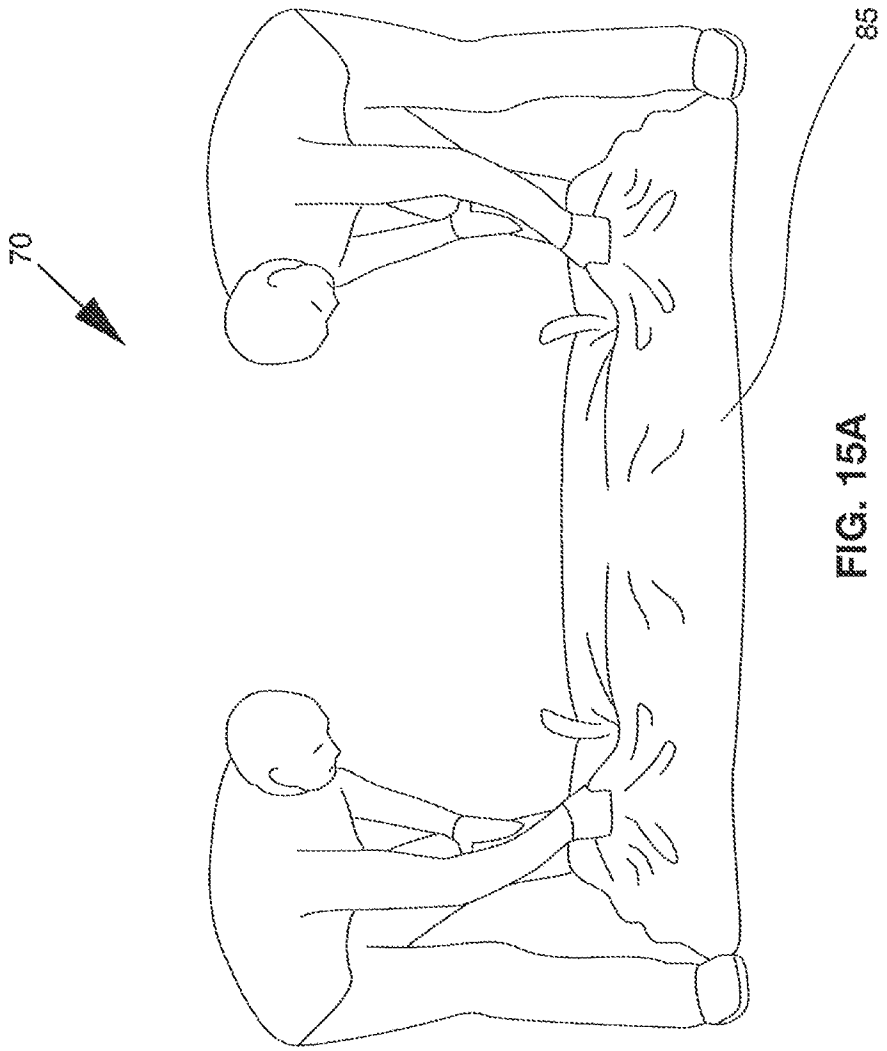


FIG. 15A

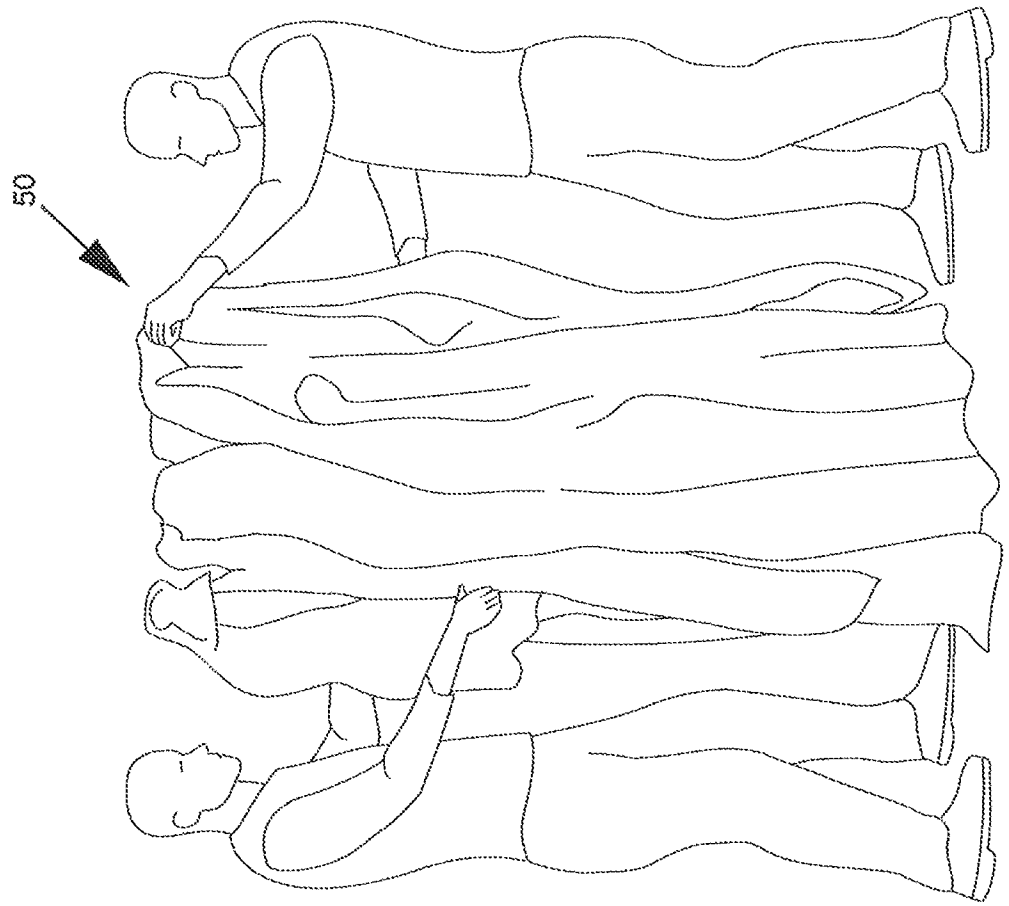


FIG. 15B

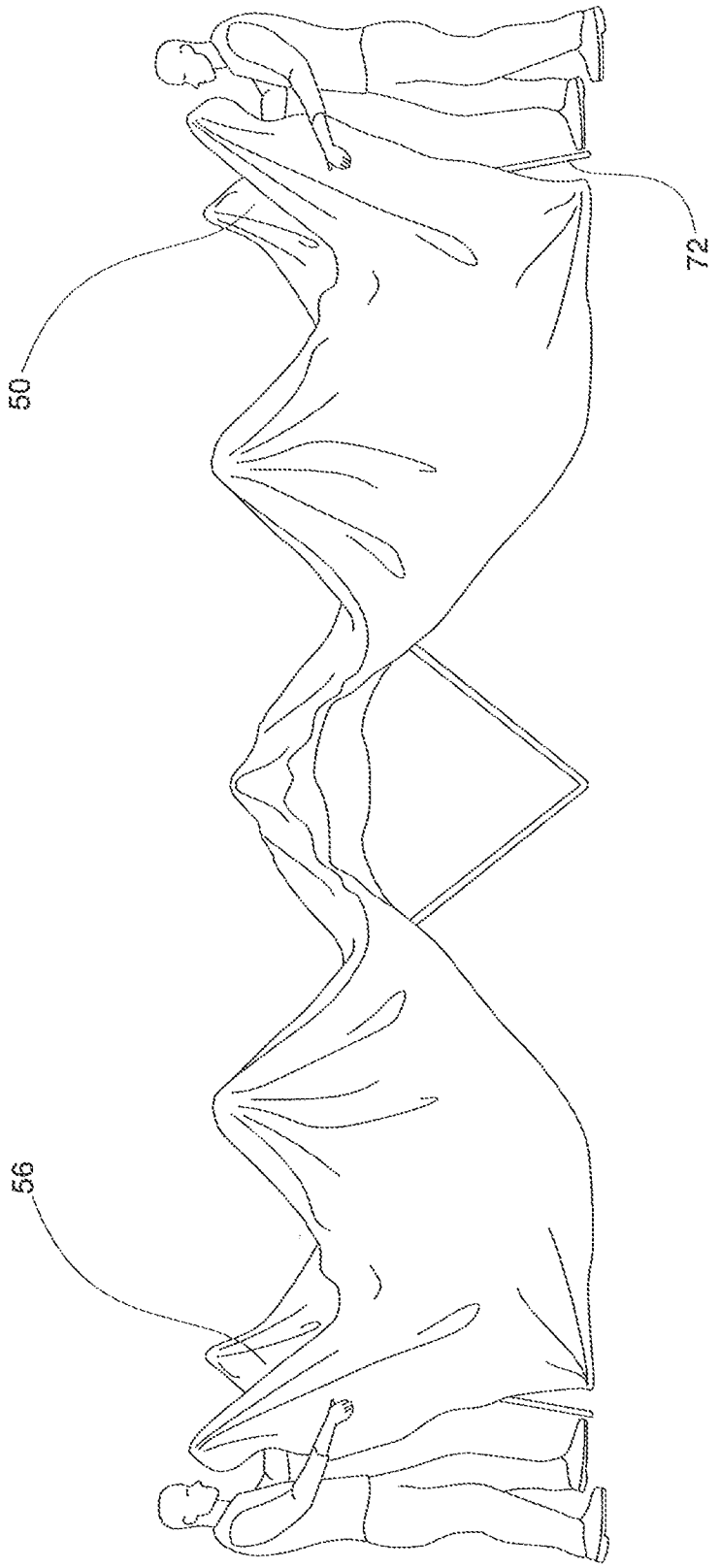


FIG. 15C

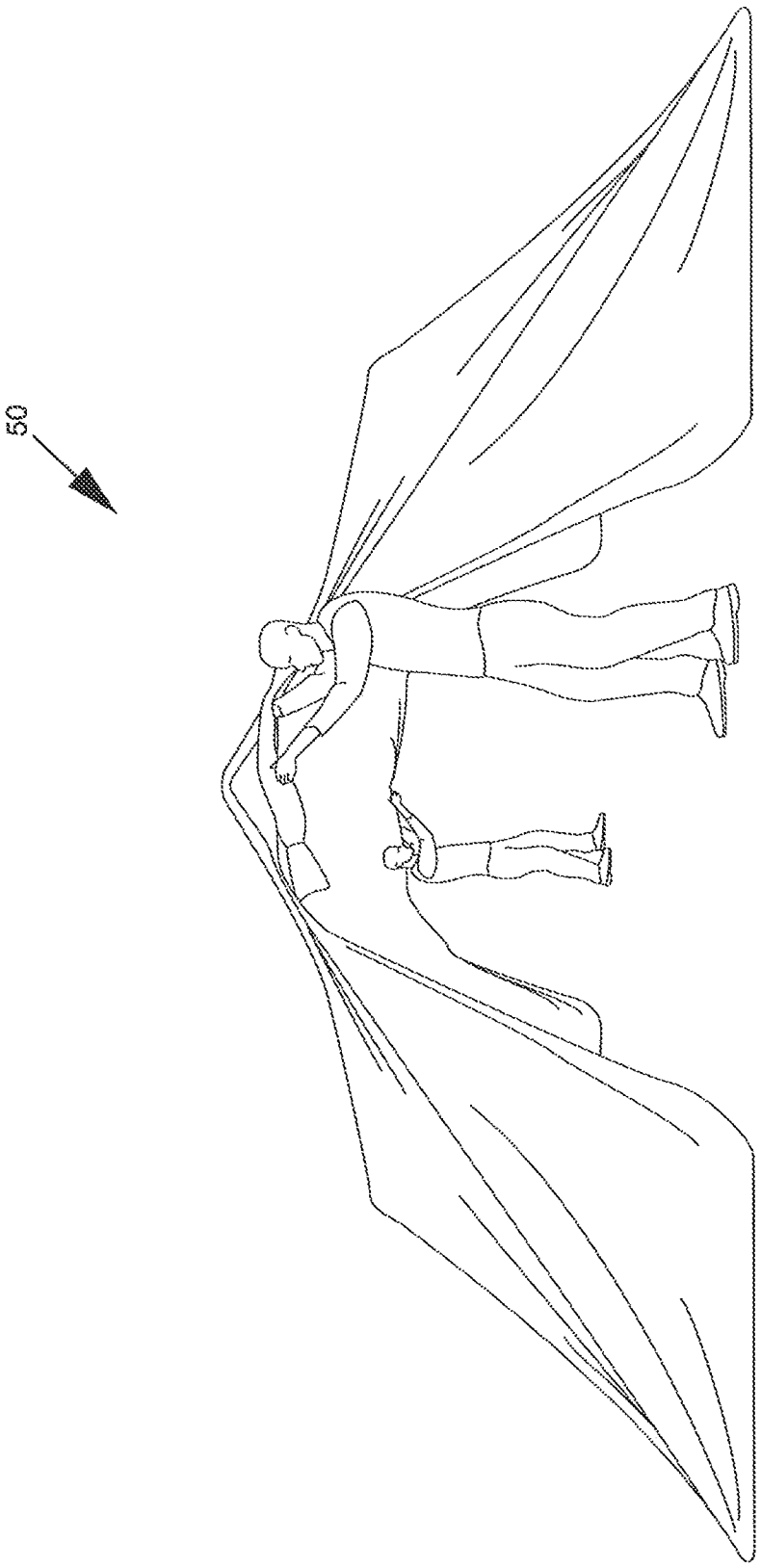


FIG. 15D

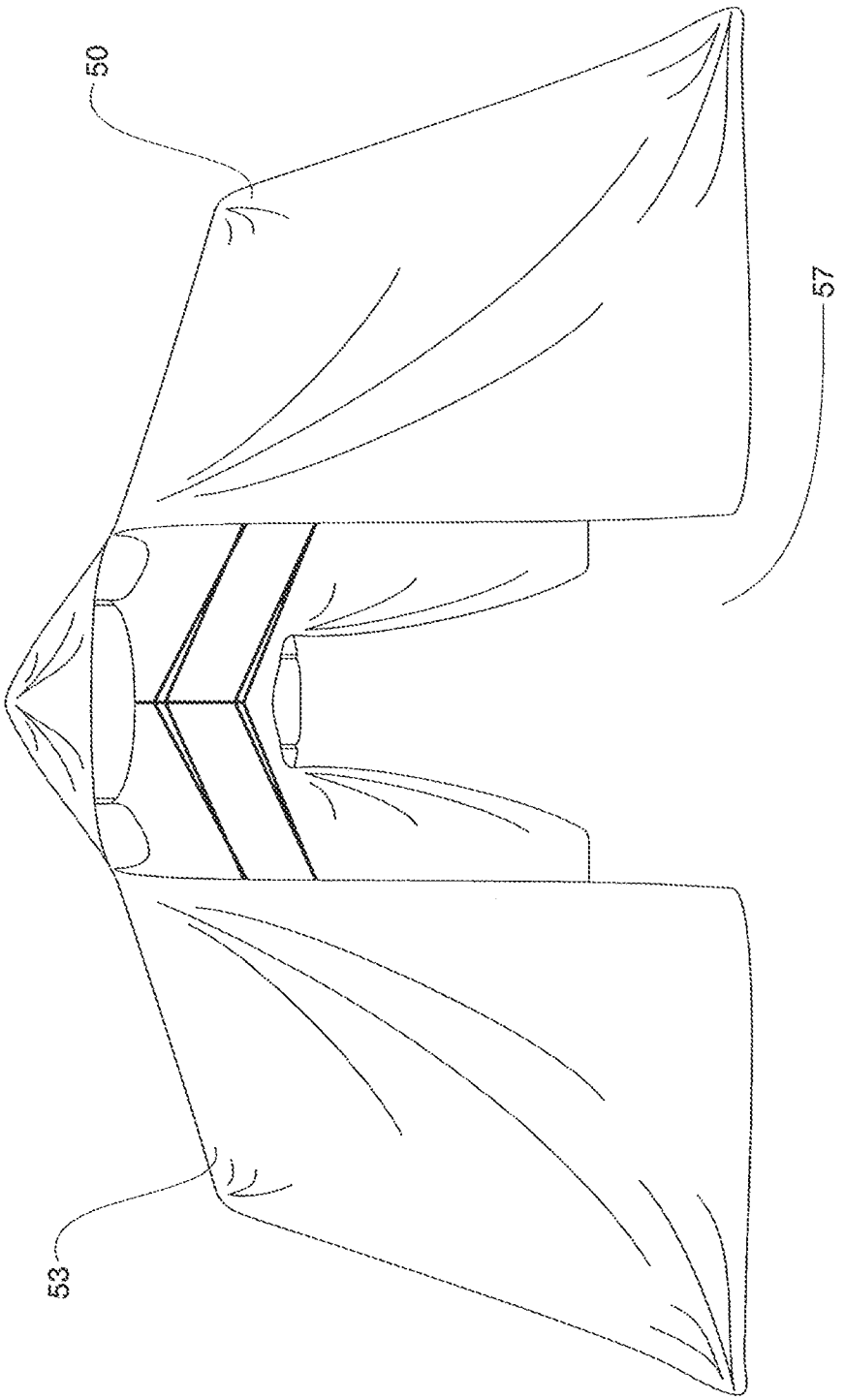


FIG. 15E

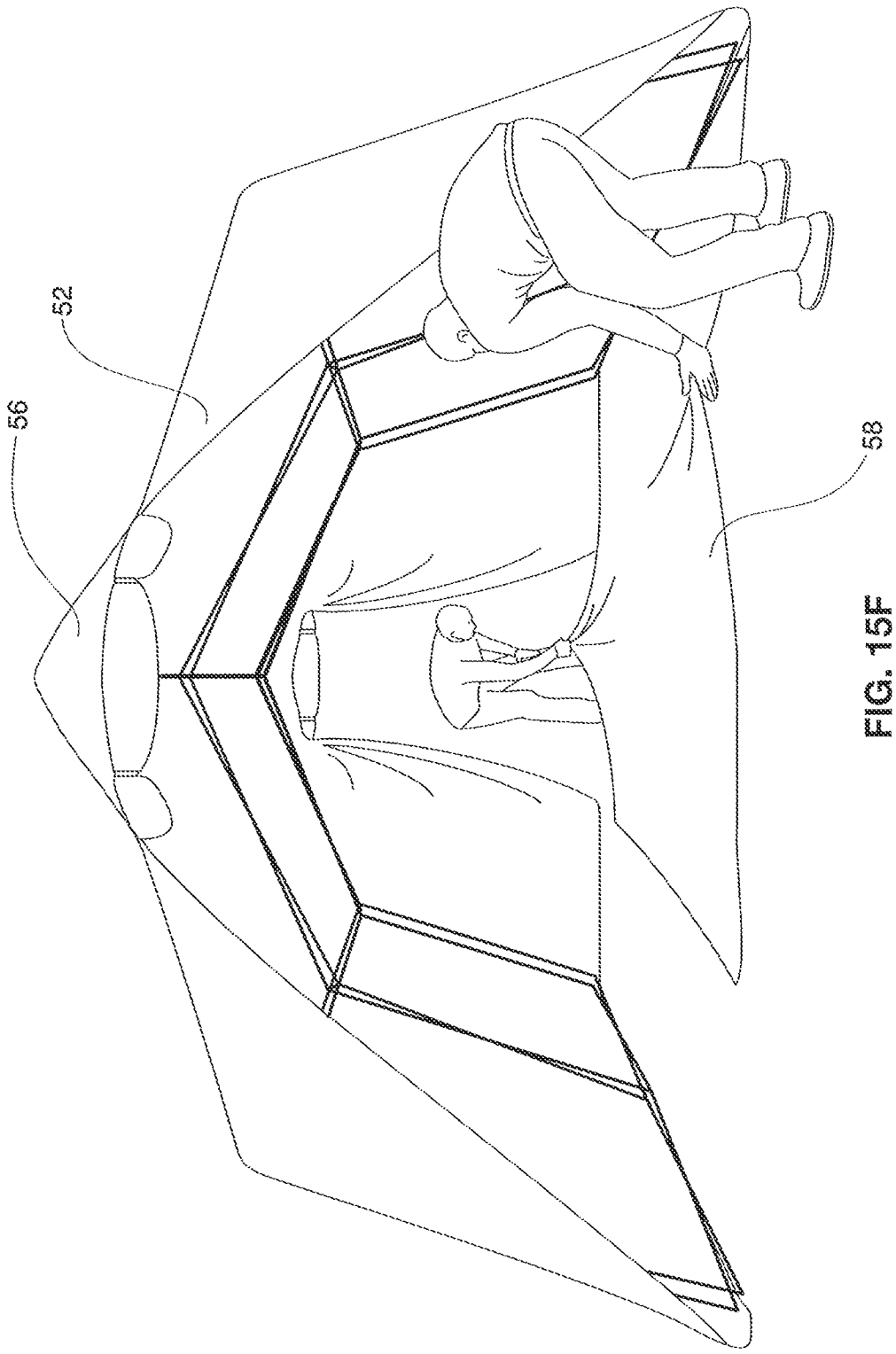


FIG. 15F

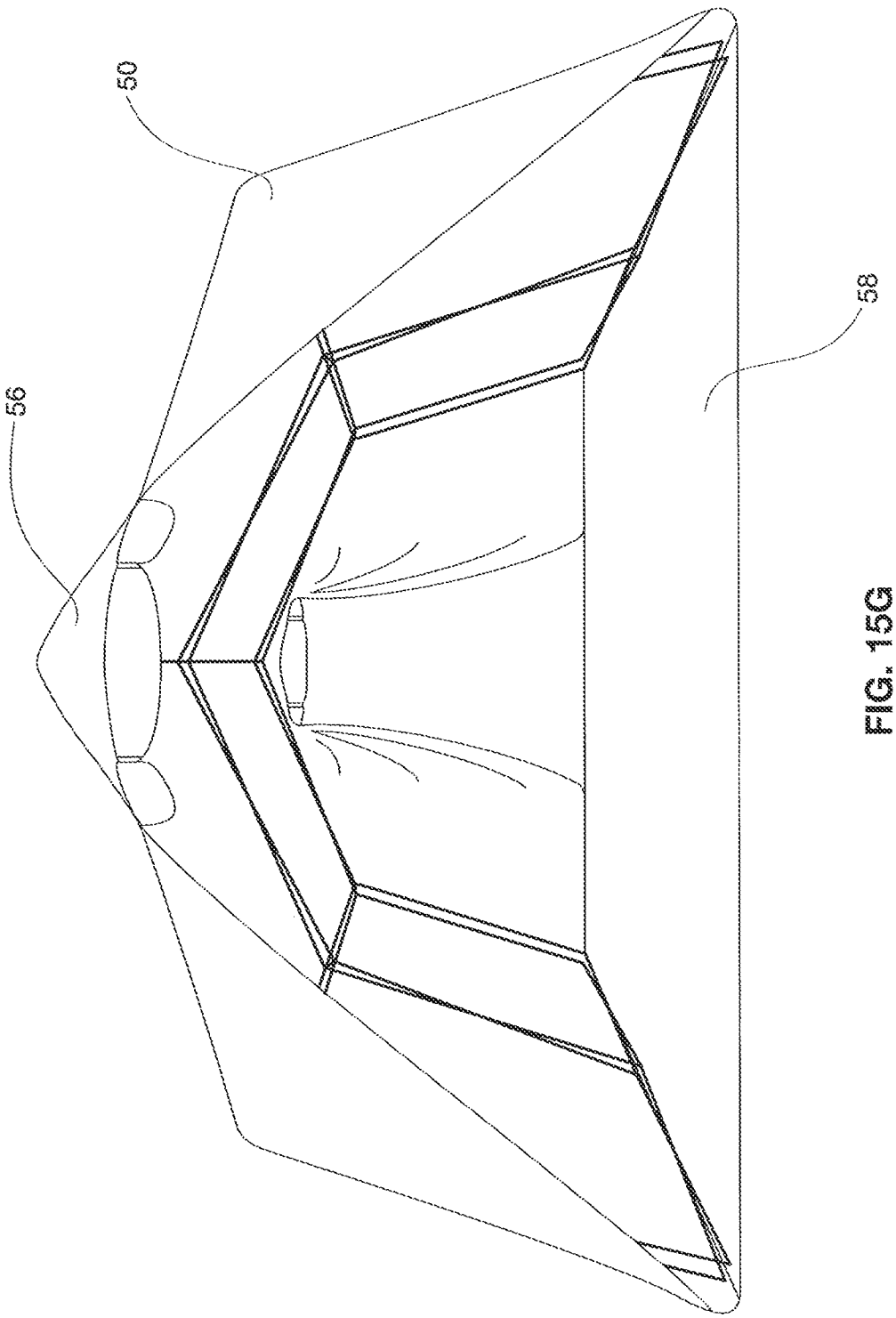


FIG. 15G

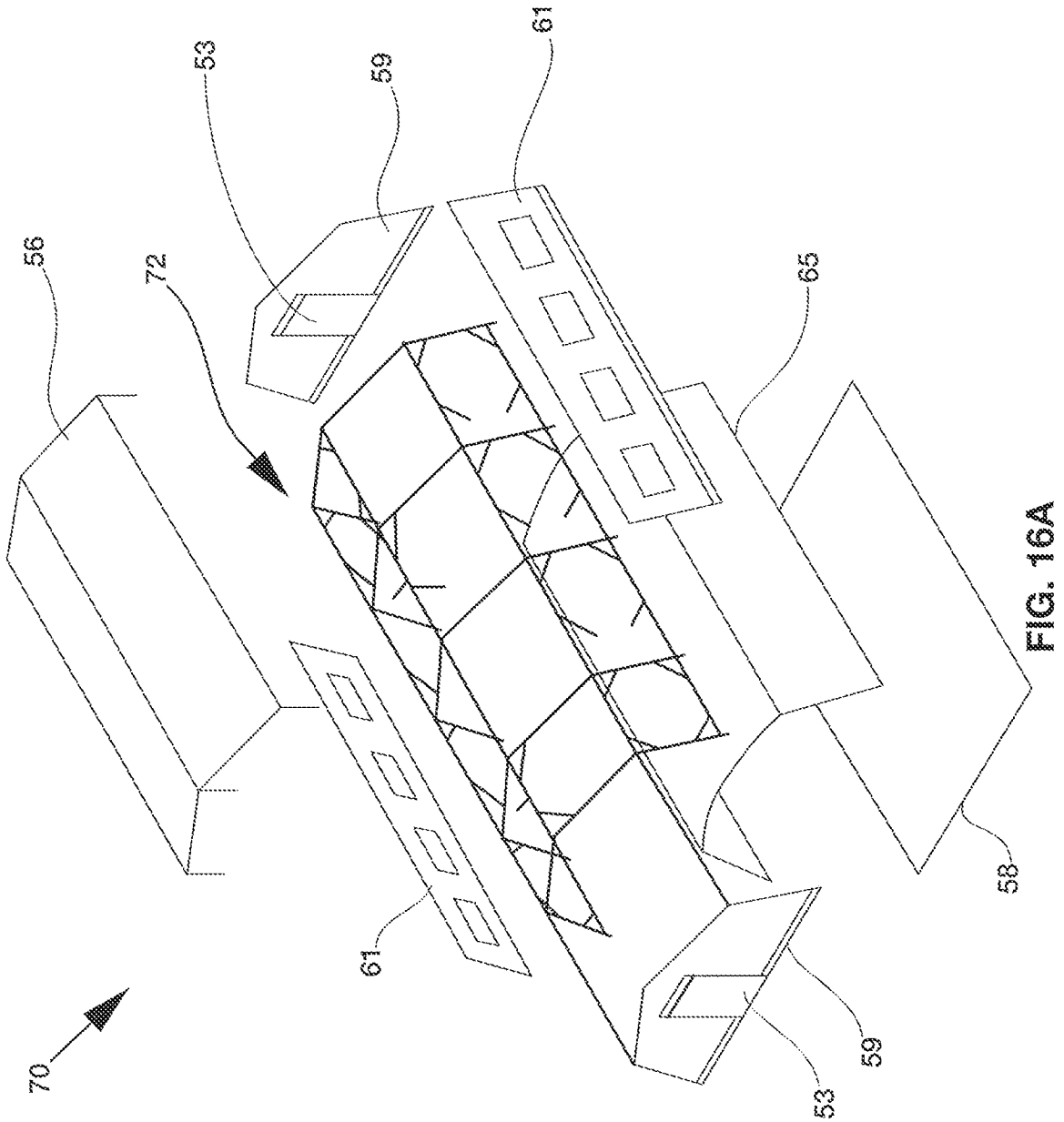


FIG. 16A

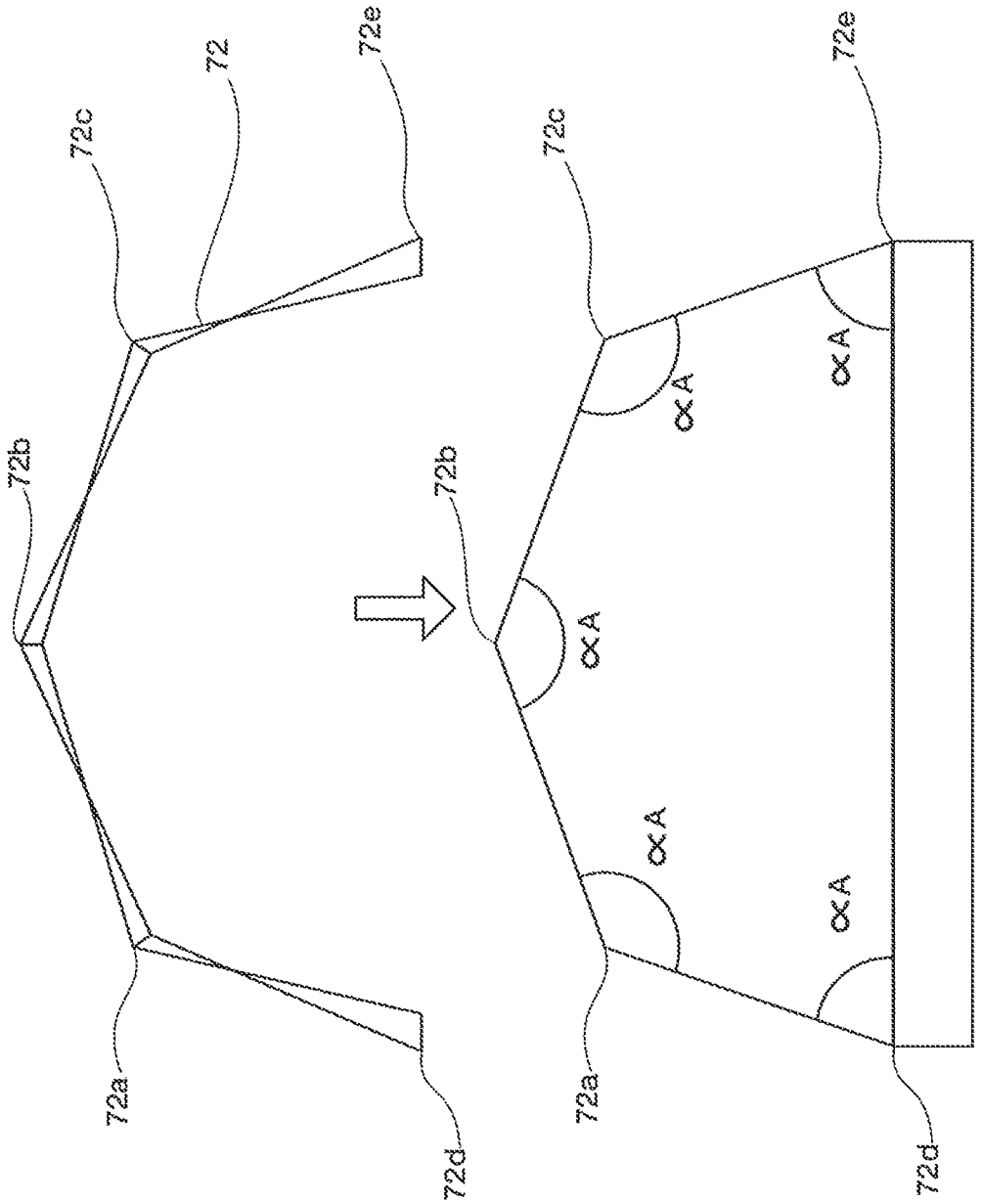


FIG. 16B

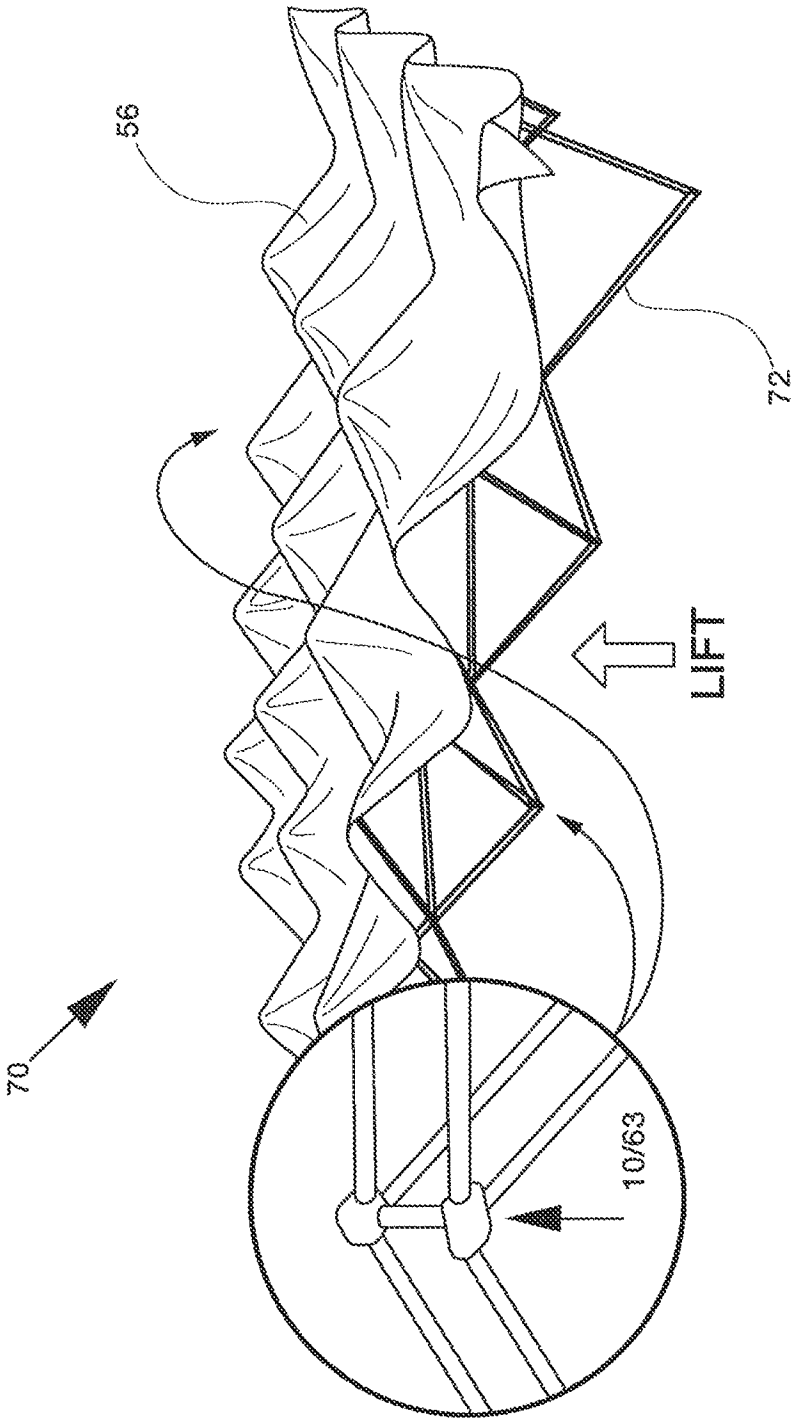


FIG. 17

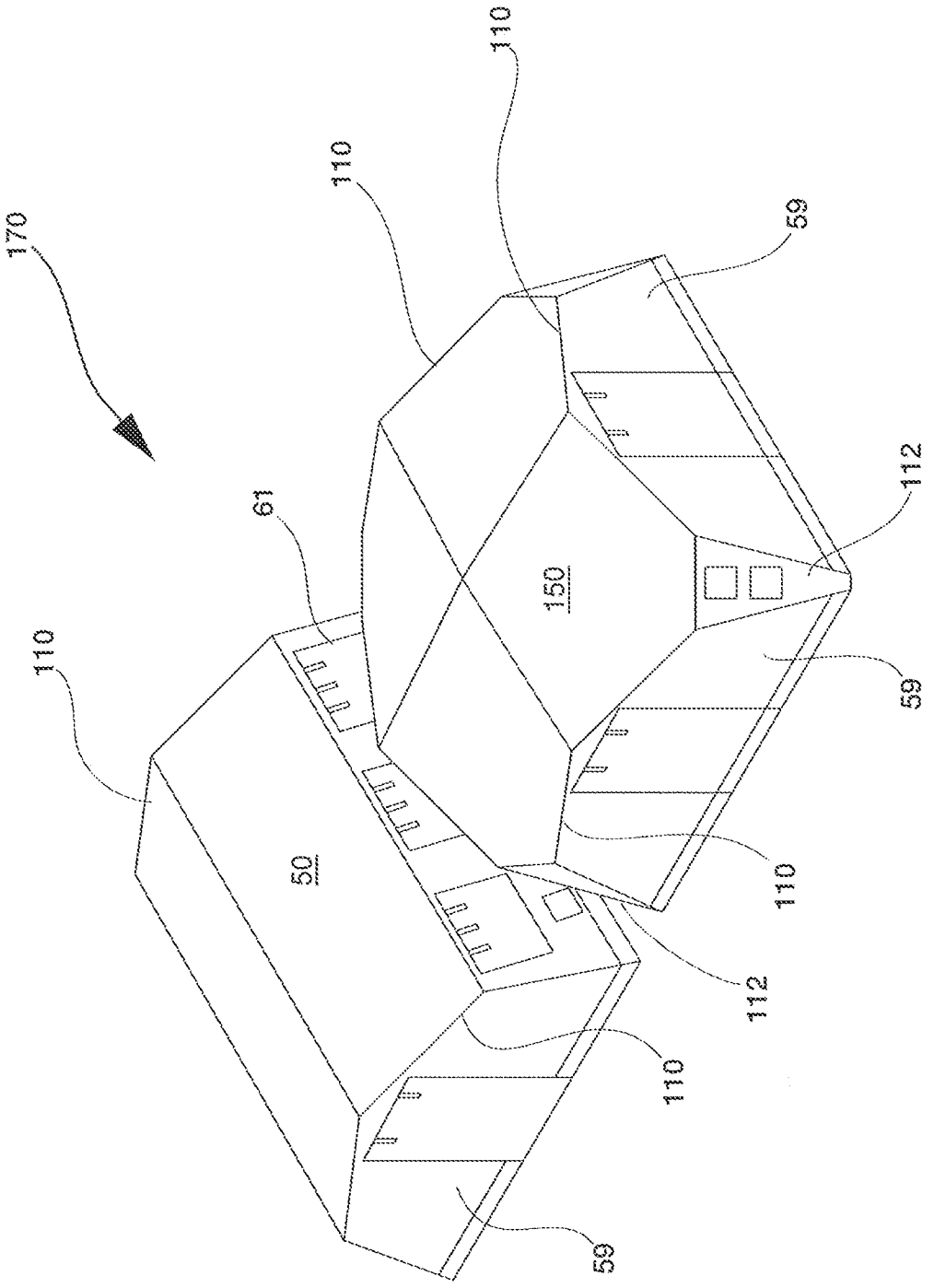


FIG. 18

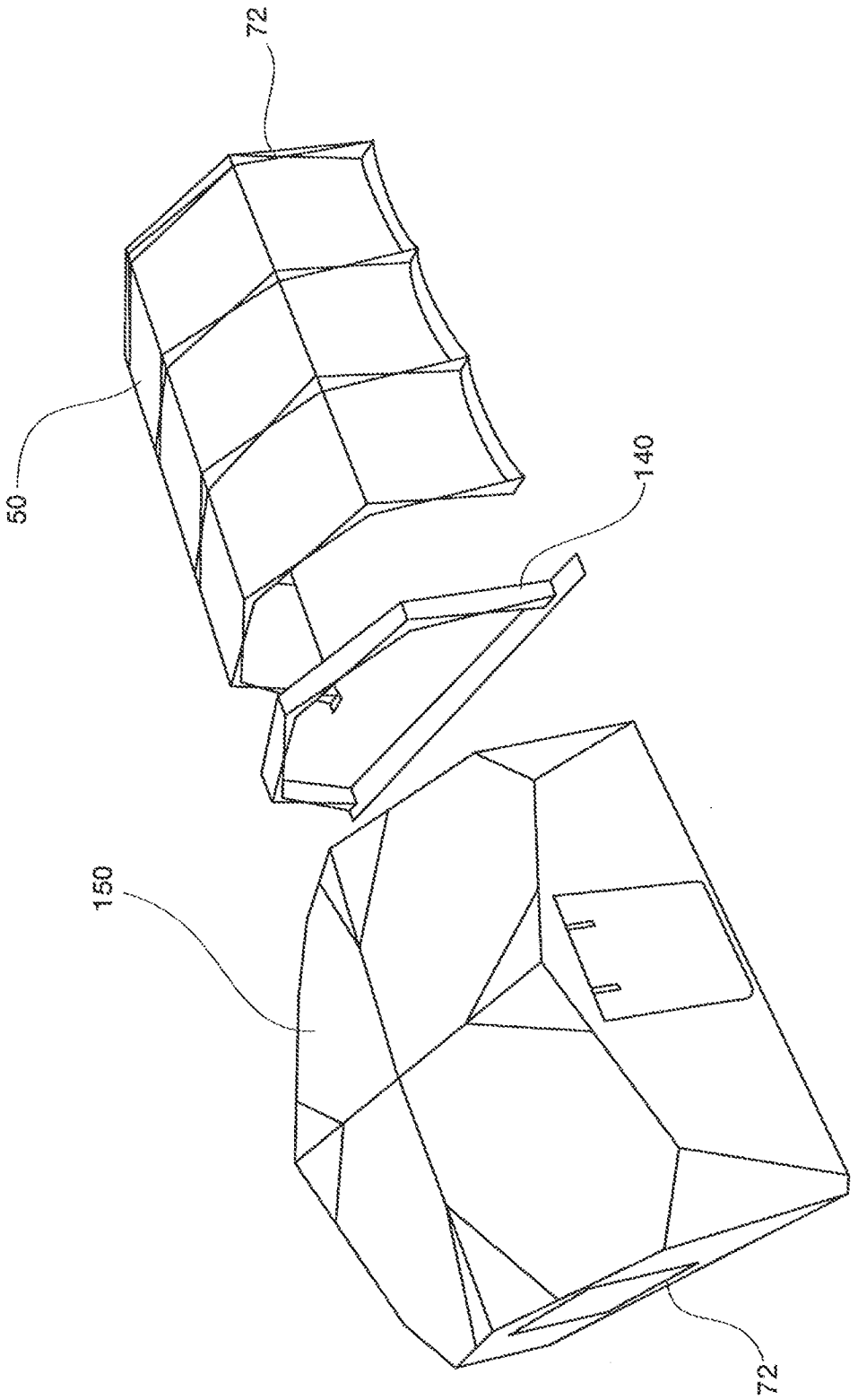


FIG. 19

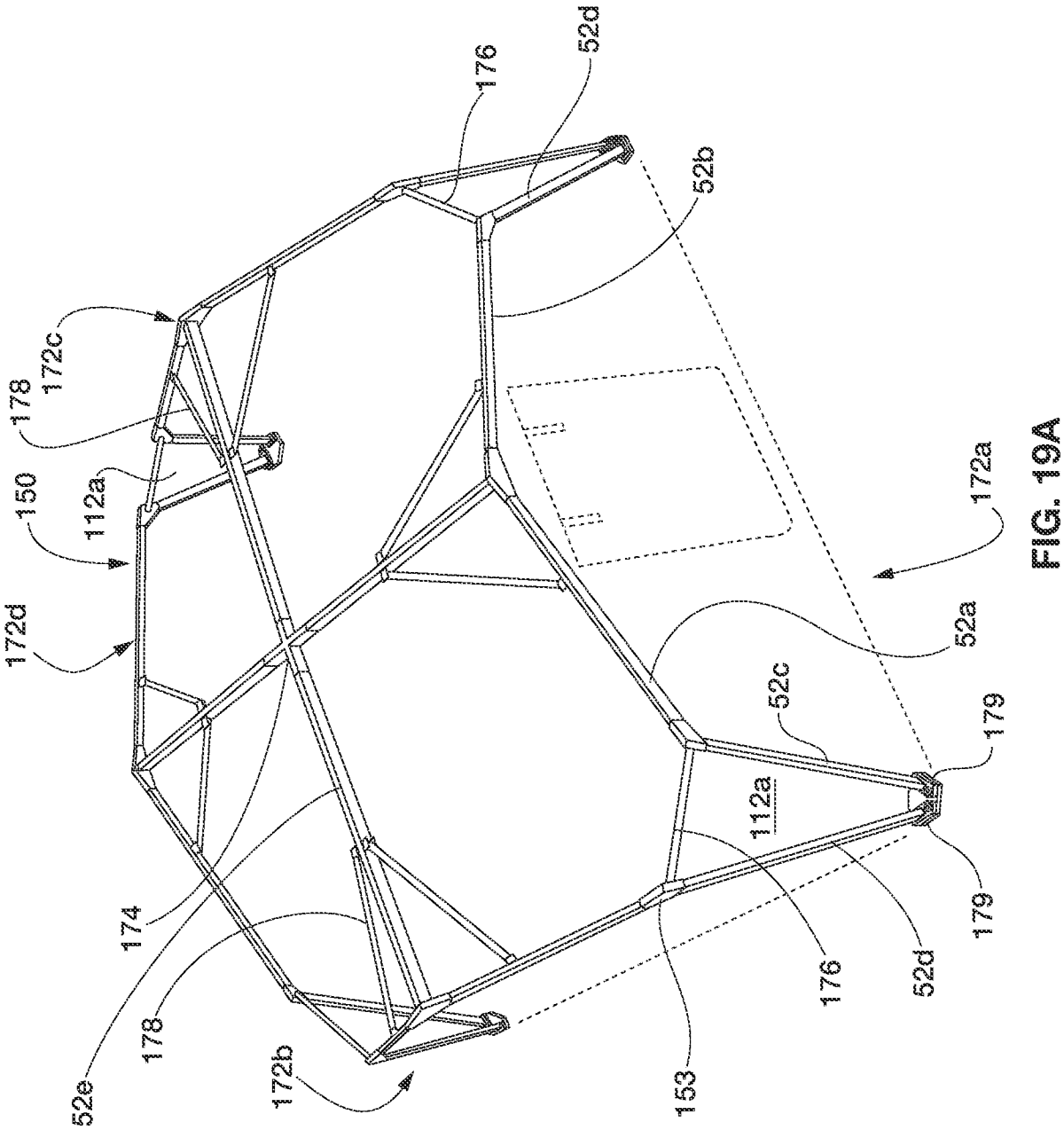

176
52d
52b
172c
178
150
112a
172d
172a
52a
52c
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112a
174
178
52e
172b
153
176
52d
179

FIG. 19A

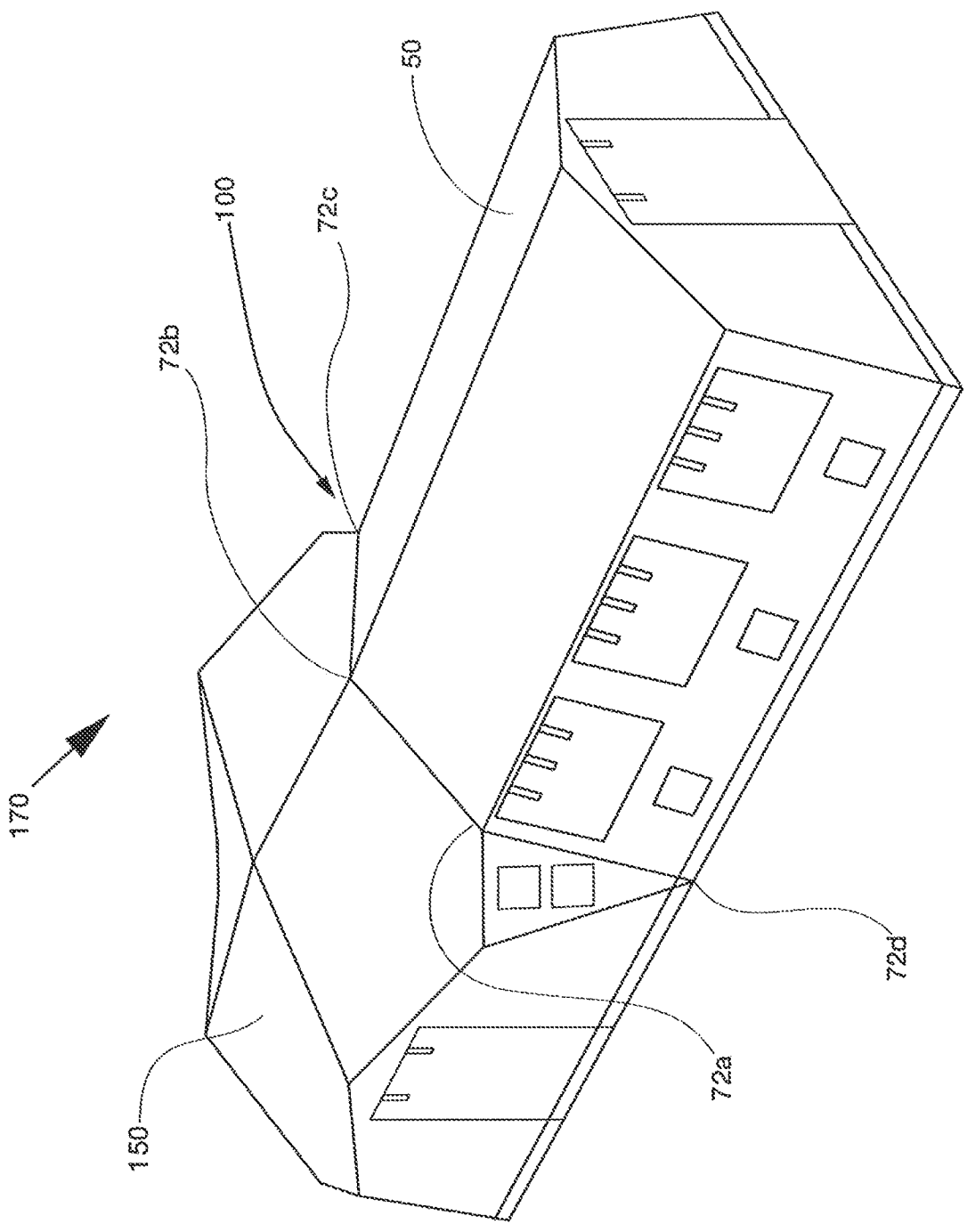


FIG. 20A

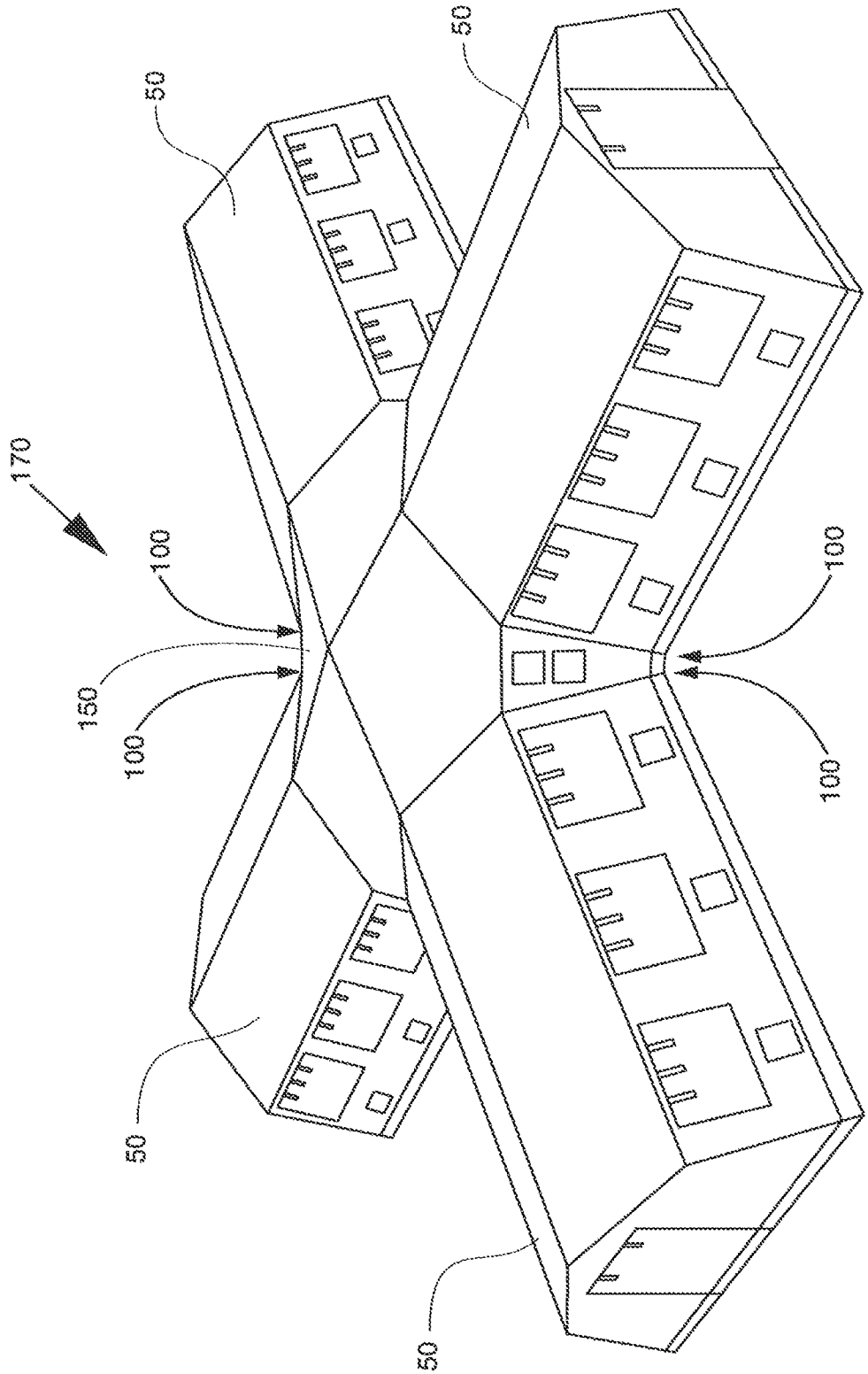


FIG. 20B

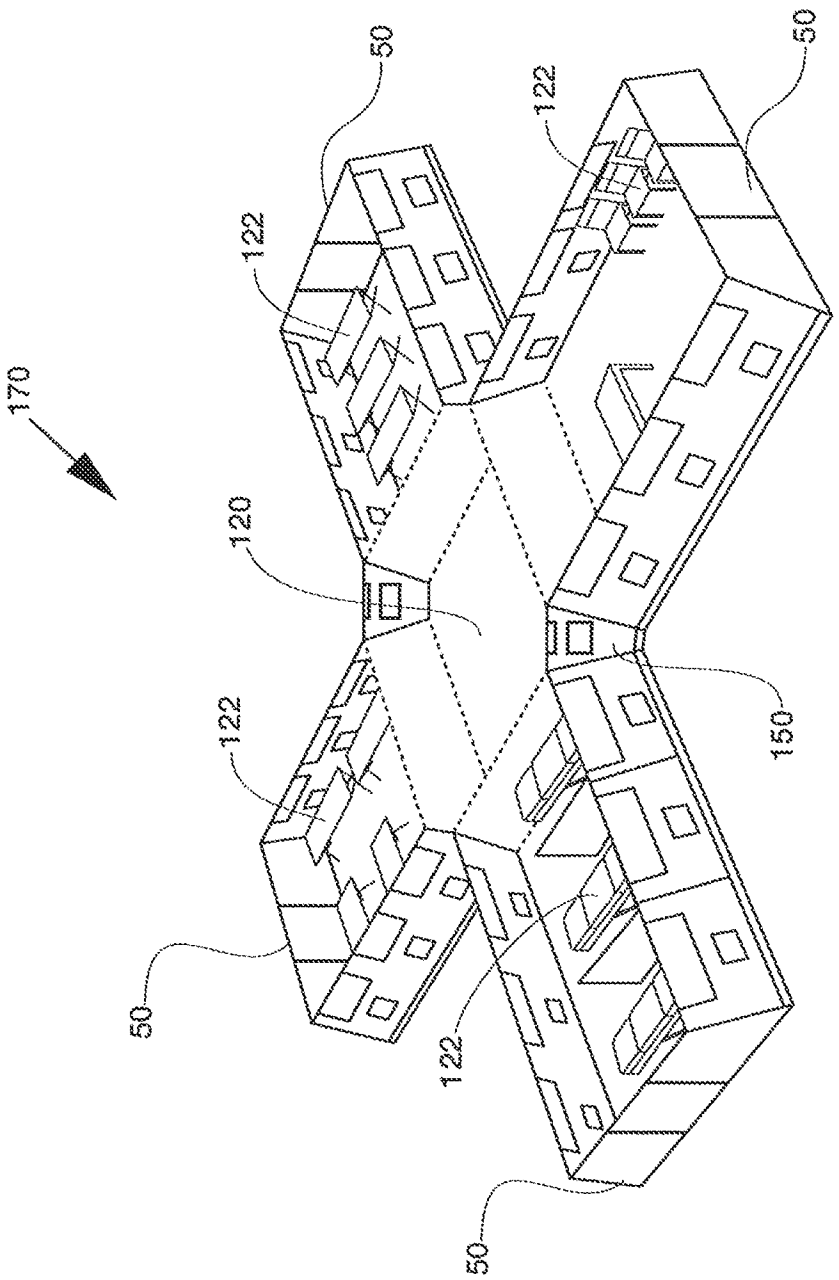


FIG. 20C

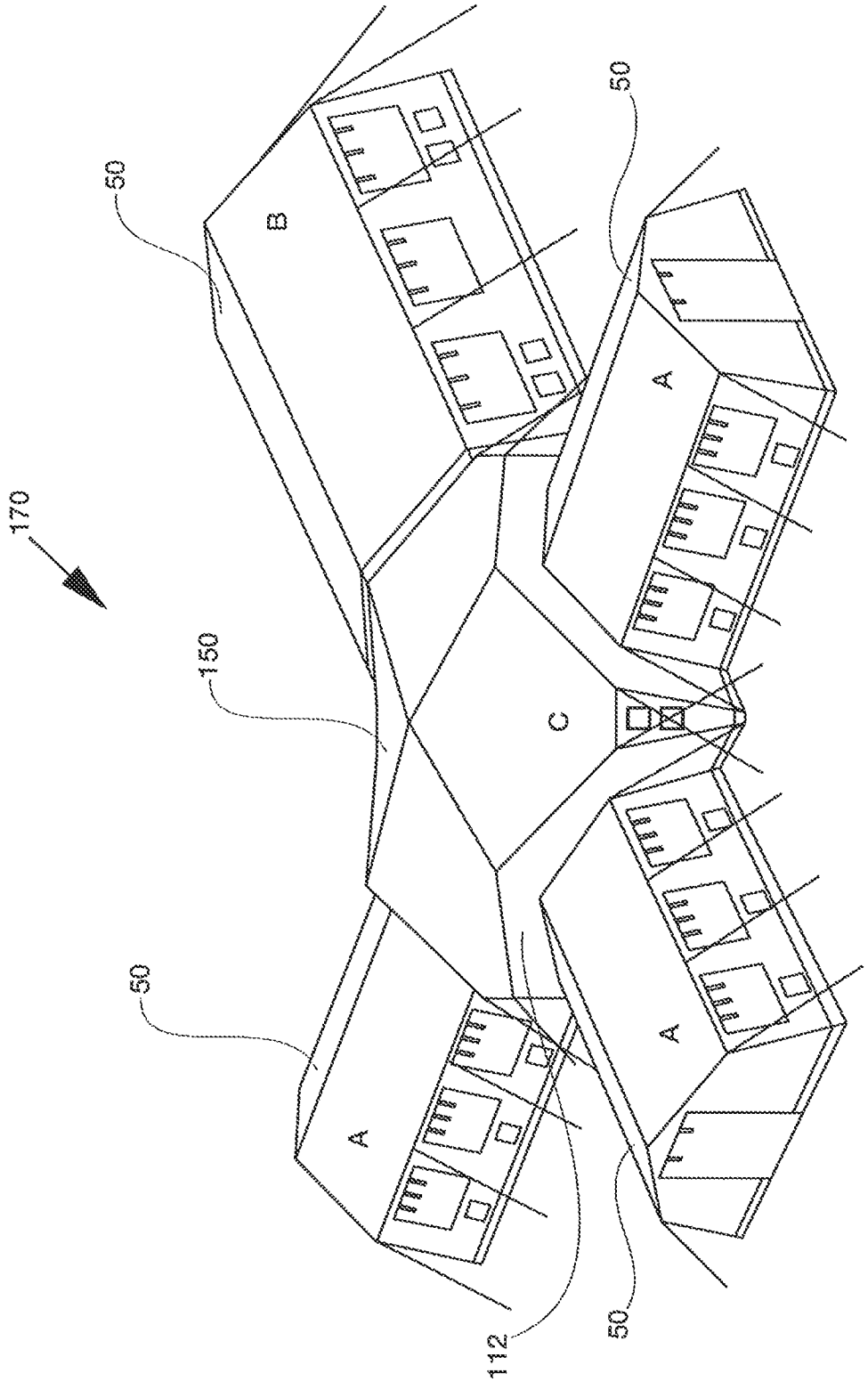


FIG. 20D

Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	SHELTER AND HUB SYSTEM
First Named Inventor/Applicant Name:	Jonathan Urhausen
Filer:	Kelly B. Robinson/Nichol Neal
Attorney Docket Number:	9693-012A-CONB

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
UTILITY FILING FEE (ELECTRONIC FILING)	4011	1	80	80
UTILITY SEARCH FEE	2111	1	350	350
UTILITY EXAMINATION FEE	2311	1	400	400
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Camel Manufacturing Company, LLC,
Case No. PGR2024-00033; Exhibit 1002

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**830**

Electronic Acknowledgement Receipt

EFS ID:	46393649
Application Number:	17886132
International Application Number:	
Confirmation Number:	8474
Title of Invention:	SHELTER AND HUB SYSTEM
First Named Inventor/Applicant Name:	Jonathan Urhausen
Customer Number:	4678
Filer:	Kelly B. Robinson/Nichol Neal
Filer Authorized By:	Kelly B. Robinson
Attorney Docket Number:	9693-012A-CONB
Receipt Date:	11-AUG-2022
Filing Date:	
Time Stamp:	16:33:47
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$830
RAM confirmation Number	E20228AG34390911
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Camel Manufacturing Company, LLC,
Case No. PGR2024-00033; Exhibit 1002

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet	WebADS.pdf	224453 b2d0cbb035160c32675a3c8a14aa786b0dd10ea8	no	9
Warnings:					
Information:					
2		9693-012A-CONB-Application.pdf	137170 010288ca15cd002ac9f53e965466c60549178fba	yes	24

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Specification	1	20
	Claims	21	23
	Abstract	24	24

Warnings:					
Information:					
3	Oath or Declaration filed	9693-012A-CONB_Declarations.pdf	181062 51673156d5fde7f80c152b1e61182f9bd4545e37	no	3
Warnings:					
Information:					
4	Drawings-only black and white line drawings	9693-012A-CONB_Drawings.pdf	11554980 21feb011ccba371736a8447ef0a128219a95abdb	no	31
Warnings:					
Information:					
5	Fee Worksheet (SB06)	fee-info.pdf	44231 1d5e4ea6406be952f6a012a2def6575d2428cc08	no	2

Warnings:	
Information:	
Total Files Size (in bytes):	12141896

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/886,132	08/11/2022	Jonathan Urhausen	9693-012A-CONB	8474

4678 7590 04/25/2023

MACCORD MASON PLLC
2733 Horse Pen Creek Road, Suite 101
GREENSBORO, NC 27410

EXAMINER	
CANFIELD, ROBERT	

ART UNIT	PAPER NUMBER
3636	

MAIL DATE	DELIVERY MODE
04/25/2023	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Camel Manufacturing Company, LLC,
Case No. PGR2024-00033; Exhibit 1002

Office Action Summary	Application No. 17/886,132	Applicant(s) Urhausen et al.	
	Examiner ROBERT CANFIELD	Art Unit 3636	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☑ Responsive to communication(s) filed on 8/11/22.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL.** 2b) ☑ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 1-20 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 1-8 and 10-20 is/are rejected.

8) ☑ Claim(s) 12 is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☑ The drawing(s) filed on 8/11/22 is/are: a)☐ accepted or b)☑ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☑ Notice of References Cited (PTO-892)

2) ☑ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

Camel Manufacturing Company, LLC,
Case No. PGR2024-00033; Exhibit 1002

Notice of Pre-AIA or AIA Status

1. This is a first office action the merits for application serial number 17/886,132 filed 8/11/22 as a continuation of application serial number 17/677,210 (pending). Claims 1-20 are pending. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

2. Applicant states that this application is a continuation of the prior-filed application. A continuation or divisional application cannot include new matter. Applicant is required to delete the benefit claim or change the relationship (continuation or divisional application) to continuation-in-part because this application contains the following matter not disclosed in the prior-filed application: Figure 19A and description do not appear any of the parent applications. A corrected ADS is required.

3. The information disclosure statement (IDS) submitted on 9/30/ is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement has been considered by the examiner.

4. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the triangular shaped corners [cl. 2] each leg forming a corner meets with another at each leg footing [cl 10] must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

5. The following is a quotation of 35 U.S.C. 112(b):

> (b) CONCLUSION.—The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.

> The following is a quotation of 35 U.S.C. 112 (pre-AIA), second paragraph:
> The specifications hall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 10, 11, 19 and 20 are rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor or a joint inventor (or for applications subject to pre-AIA 35 U.S.C. 112, the applicant), regards as the invention.

In claim 10 "each leg footing" lacks antecedent basis.

In claims 11 and 19, "the leg footings" lack antecedent basis.

7. Claim 12 is objected to because of the following informalities: there should be a space between "claim 1" and "wherein". Appropriate correction is required.

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a)(1) the claimed invention was patented, described in a printed publication, or in public use, on sale, or otherwise available to the public before the effective filing date of the claimed invention.

9. Claims 1-8 and 10-20 are rejected under 35 U.S.C. 102(a)(1) as being anticipated by U.S. Patent 7,448,700 to Jensen.

Jensen provides a four-sided shelter with triangular frame corners offset between each of the side, a shoulder support in each corner, sets of upper frame poles that mate via rods 130 to form a peak (where peak is interpreted as the highest elevation of the shelter) , leg poles 102 joined to footers 112. Figure 5 provides 2-way connectors and Figures 6-7 provide 3-way connectors which are considered to meet the limitation of a shoulder between the and attaching the respective poles. A center frame assembly is provided by cross poles 105/106 (see col. 4, lns. 13-15).

When reading the preamble in the context of the entire claim, the recitation "rapid-deployment" is not limiting because the body of the claim describes a complete invention and the language recited solely in the preamble does not provide any distinct

definition of any of the claimed invention's limitations. Thus, the preamble of the claim(s) is not considered a limitation and is of no significance to claim construction. See *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1305, 51 USPQ2d 1161, 1165 (Fed. Cir. 1999). See MPEP § 2111.02.

With respect to claim 20, the shelter is capable of being disassemble and assembled or "collapsed" and deployed [col. 1, ln. 17, col. 6, ln. 63] also the fitting and poles are disclosed as releasable which indicates that shelter may be collapsed.

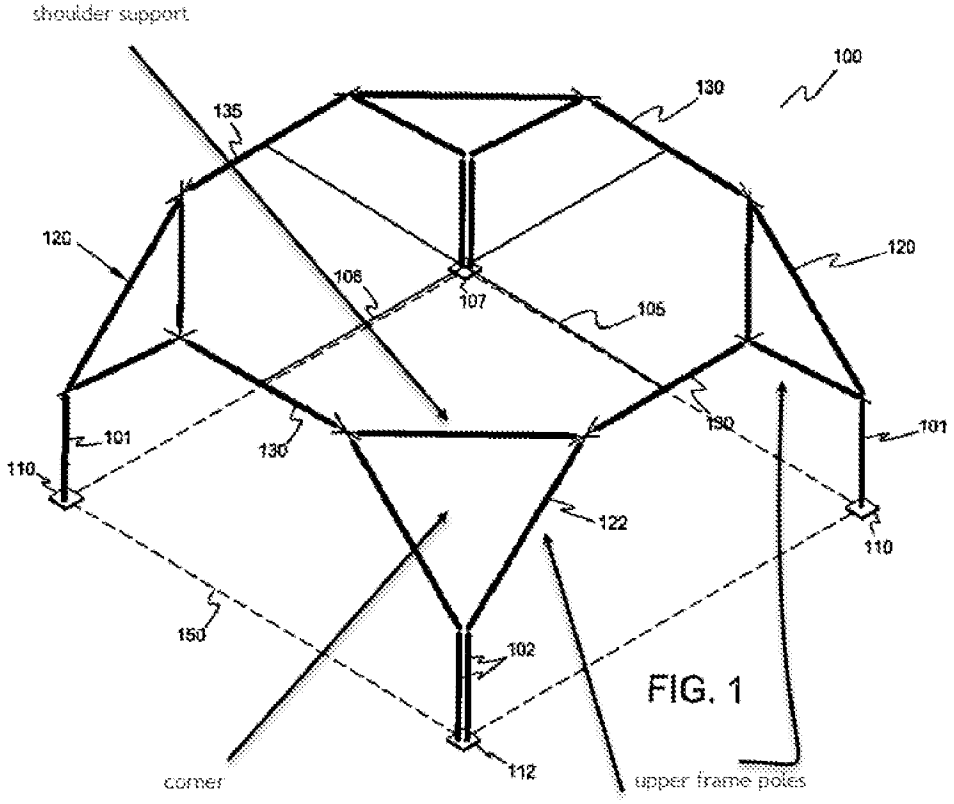


FIG. 1

10. Claim 9 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

12. The examiner suggests:

a. that the independent claims be amended to require the upper frame poles to be directly connected/mated at a peak to overcome Jensen;

b. That claim 3 be amended from “triangular” to - - trapezoidal - - as the shape shown in figure 19a is trapezoidal not triangular; and

c. That claim 10 be amended as follows:

i. 10. The rapid-deployment shelter of claim 8 wherein each leg forming a corner meets ~~one with another~~ at ~~each~~ a leg footing.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT CANFIELD whose telephone number is (571)272-6840. The examiner can normally be reached M-F 10-6, some Saturdays.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Dunn can be reached on 571-272-6670. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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ROBERT CANFIELD
Primary Examiner
Art Unit 3636

/Robert Canfield/
Primary Examiner, Art Unit 3636

Notice of References Cited	Application/Control No. 17/886,132	Applicant(s)/Patent Under Reexamination Urhausen et al.	
	Examiner ROBERT CANFIELD	Art Unit 3636	Page 1 of 2

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*	C	US-7448400-B2	11-2008	Jensen; Norman L.	E04H15/18	52/63
*	D	US-6129102-A	10-2000	Carter; Mark C.	E04H15/50	135/144
*	E	US-5441069-A	08-1995	Moss; C. William	E04H15/58	135/124
*	F	US-5345962-A	09-1994	Moss; C. William	E04H15/322	135/156
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*	J	US-3092932-A	06-1963	WILSON WINFRED E	E04B7/105	52/645
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	N					
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	Q					
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Case No. PGR2024-00033; Exhibit 1002

Notice of References Cited	Application/Control No. 17/886,132	Applicant(s)/Patent Under Reexamination Urhausen et al.	
	Examiner ROBERT CANFIELD	Art Unit 3636	Page 2 of 2

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Case No. PGR2024-00033; Exhibit 1002

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/886,132	Urhausen et al.
	Examiner	Art Unit
	ROBERT CANFIELD	3636

CPC - Searched*		
Symbol	Date	Examiner
(E04H15/18 OR E04B1/19 OR E04B1/1903 OR E04B7/02 OR E04B7/06 OR E04B7/08 OR E04B7/105 OR E04H15/34 OR E04H15/36 OR E04H15/44 OR E04B2001/1957).cpc.	04/21/2023	RC

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner
52	18, 90.1, Dig.10	04/21/2023	RC
135	158-160		

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Search Notes	Date	Examiner
classification/text/name/citation search - attached	04/21/2023	RC
review file and search history of all parent applications and checked for possible double patenting issues		

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner

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Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (01-10)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Application Number	17886132
Filing Date	2022-08-11
First Named Inventor	Jonathan Urhausen
Art Unit	
Examiner Name	
Attorney Docket Number	9693-012A-CONB

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	2	7556054		2009-07-07	Theodore R. Zeigler	
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	6	5666986		1997-09-16	Clifford Royston Fox	
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	22	8360085		2013-01-29	Sunghee Lee	
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	25	4658560		1987-04-21	Bryan J. Beaulieu	
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	27	D544941		2007-06-19	Thomas Edward Rogers	
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	30	6758354		2004-07-06	Ottavio Carletti	

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	53	3955328		1076-05-11	Jeffrey Lindsay	
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	2	20140182643		2014-07-03	Baoqing Yang	
	3	20060260666		2006-11-23	Choi	
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	First Named Inventor	Jonathan Urhausen
	Art Unit	
	Examiner Name	
	Attorney Docket Number	9693-012A-CONB

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	Examiner Name	
	Attorney Docket Number	9693-012A-CONB

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PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L1	3	((("DLX") near3 ("ENTERPRISES") near3 ("LLC"))).AS,AANM.	(USPAT)	OR	ON	ON	2023/04/21 10:57 AM
L2	19	((("URHAUSEN") near3 ("Jonathan")) OR (("BARR") near3 ("Adam")) OR (("BIERMAN") near3 ("Donald"))).INV.	(US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT)	OR	ON	ON	2023/04/21 10:59 AM
L3	76	("10060151" OR "10309093" OR "10858856" OR "10995516" OR "20040173252" OR "20050189009" OR "20050204680" OR "20050204681" OR "20060260666" OR "20060283103" OR "20070039639" OR "20070051399" OR "20070084493" OR "20070125410" OR "20080017232" OR "20080017233" OR "20080264462" OR "20100170162" OR "20120090455" OR "20130008478" OR "20140182643" OR "20150167343" OR "20150240513" OR "20170247906" OR "20180155952" OR "20200190844" OR "3559353" OR "3929146" OR "3955328" OR "4373305" OR "4649947" OR "4658560" OR "4689932" OR "4706696" OR "4846204" OR "4886084" OR "4945936" OR "4953329" OR "4995212" OR "5017068" OR "5069572" OR "5159948" OR	(US-PGPUB; USPAT)	OR	ON	ON	2023/04/21 11:00 AM

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L18	2063	(12 10 4 16 15 17)	(US-PGPUB; USPAT; USOCR; EPO; JPO)	OR	ON	ON	2023/04/21 11:47 AM
L19	4542	(E04H15/18 OR E04B1/19 OR E04B1/1903 OR E04B7/02 OR E04B7/06 OR E04B7/08 OR E04B7/105 OR E04H15/34 OR E04H15/36 OR E04H15/44 OR E04B2001/1957).cpc.	(US-PGPUB; USPAT; USOCR; EPO; JPO)	OR	ON	ON	2023/04/21 11:51 AM
L20	4242	19 NOT 18	(US-PGPUB; USPAT; USOCR; EPO; JPO)	OR	ON	ON	2023/04/21 11:51 AM
L21	41	("3376879" | "3388711" | "3640296" | "3811454" | "3856029" | "3886961" | "3894766" | "3909993" | "4064663" | "4092992" | "4269210" | "4555124" | "4584800" | "4614451" | "4745936" | "4886084" | "5215109").pn. OR ("5345962").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/04/21 12:13 PM
L22	22	("0630217" | "1541247" | "2573946" | "2840924" | "3998003" | "4232473" | "4371344" | "4583956" | "4701131" | "4705250" | "4717108" | "4731962" | "4934638" | "4997375").pn. OR ("5316483").urpn. AND (PGPB | USPT | USOC).dbnm.	(US-PGPUB; USPAT; USOCR)	OR	ON	ON	2023/04/21 12:14 PM
L24	35	(building tent canopy shelter) WITH four WITH (side sided) WITH peak	(US-PGPUB; USPAT; USOCR; EPO; JPO)	OR	ON	ON	2023/04/21 12:23 PM
L25	110	(building tent canopy shelter) WITH (intersection intersected intersecting) WITH ridge	(US-PGPUB; USPAT; USOCR; EPO; JPO)	OR	ON	ON	2023/04/21 12:24 PM
L26	67	(building tent canopy shelter) WITH (hub) WITH (peak ridge)	(US-PGPUB; USPAT; USOCR; EPO; JPO)	OR	ON	ON	2023/04/21 12:25 PM

Camel Manufacturing Company, LLC
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L27	21	((US-11280107-B1 OR US-10858856-B1 OR US-D652885-S OR US-7581358-B2 OR US-4320603-A OR US-6129102-A OR US-4555878-A OR US-D732694-S OR US-7448400-B2 OR US-5000211-A OR US-5345962-A OR US-5441069-A OR US-4886084-A OR US-8701357-B2 OR US-8919363-B1).did. AND USPT.dbnm.) OR ((US-20070125410-A1 OR US-20210301551-A1).did. AND PGPB.dbnm.) OR ((US-D204239-S OR US-2931129-A OR US-3092932-A OR US-3090162-A).did. AND USOC.dbnm.)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2023/04/21 12:46 PM

PE2E SEARCH - Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
N1	62	(building tent canopy shelter) WITH (hub) WITH (peak ridge)	(US-PGPUB; USPAT)	OR	ON	ON	2023/04/21 01:00 PM
N2	78	(building tent canopy shelter) WITH (intersection intersected intersecting) WITH ridge	(US-PGPUB; USPAT)	OR	ON	ON	2023/04/21 01:00 PM
N3	24	(building tent canopy shelter) WITH four WITH (side sided) WITH peak	(US-PGPUB; USPAT)	OR	ON	ON	2023/04/21 01:00 PM
N4	431	(building tent canopy shelter) WITH rapid WITH deployment	(US-PGPUB; USPAT)	OR	ON	ON	2023/04/21 01:01 PM
N5	0	(building tent canopy shelter) WITH rapid WITH deployment WITH peak	(US-PGPUB; USPAT)	OR	ON	ON	2023/04/21 01:01 PM
N6	593	1 2 3 4	(US-PGPUB; USPAT)	OR	ON	ON	2023/04/21 01:01 PM

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Case No. PGR2024-00033; Exhibit 1002

PTO/SB/08a (01-10)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	17886132
Filing Date	2022-08-11
First Named Inventor	Jonathan Urhausen
Art Unit	
Examiner Name	
Attorney Docket Number	9693-012A-CONB

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	6772780		2004-08-10	Roy Justin Price	
	2	7556054		2009-07-07	Theodore R. Zeigler	
	3	4945936		1990-08-07	Dennis C. Surrendi	
	4	7131236		2006-11-07	Chad Sample	
	5	4846204		1989-07-11	Bae Sok Kyu	
	6	5666986		1997-09-16	Clifford Royston Fox	
	7	6553699		2003-04-29	Mathias D. Kemeny	
	8	8925565		2015-01-06	Kwan Jun Choi	

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
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	First Named Inventor	Jonathan Urhausen
	Art Unit	
	Examiner Name	
	Attorney Docket Number	9693-012A-CONB

	9	9243423		2016-01-26	Ki Ho Jin	
	10	9243424		2016-01-26	Ki Ho Jin	
	11	9631393		2017-04-25	Theodore R. Zeigler	
	12	D454609		2002-03-19	Meyerhoffer et al	
	13	5069572		1991-12-03	Niksic	
	14	4706696		1987-11-17	Gillis	
	15	6802329		2004-10-12	Chen	
	16	5634483		1997-06-03	Gwin	
	17	4995212		1991-02-26	James N. Morgan	
	18	6223482		2001-05-01	Herman Zahar	
	19	6553698		2003-04-29	Mathias D Kemeny	

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	Examiner Name	
	Attorney Docket Number	9693-012A-CONB

	20	8496019		2013-07-30	Nanqing Zhou	
	21	9605441		2017-03-28	Kwan Jun Choi	
	22	8360085		2013-01-29	Sunghee Lee	
	23	5017068		1991-05-21	James D. Cooksey	
	24	8448656		2013-05-28	Kwan Jun Choi	
	25	4658560		1987-04-21	Bryan J. Beaulieu	
	26	5943837		1999-08-31	Richard A. Esser	
	27	D544941		2007-06-19	Thomas Edward Rogers	
	28	3929146		1975-12-30	Francis H. Maiken	
	29	9163425		2015-10-20	Ryan L. Kubica	
	30	6758354		2004-07-06	Ottavio Carletti	

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	Examiner Name	
	Attorney Docket Number	9693-012A-CONB

	31	10309093		2019-06-04	Urhausen et al	
	32	10995516		2021-05-04	Thad B. Ribner	
	33	8082938		2011-12-27	Jon A. Prusmack	
	34	6141934		2000-11-07	Theodore R. Zeiglar	
	35	4953329		1990-09-04	Erich Franti	
	36	4689932		1987-09-01	Theodore R. Zeiglar	
	37	4373305		1983-02-15	Leslie T. Russell	
	38	10060151		2018-08-28	Ronald L. Krenzel	
	39	10858856		2020-12-08	Jacob Dusek	
	40	9869110		2018-01-16	Ronald L. Krenzel	
	41	9752345		2017-09-05	John Matthew LaHood	

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	First Named Inventor	Jonathan Urhausen
	Art Unit	
	Examiner Name	
	Attorney Docket Number	9693-012A-CONB

	42	9714523		2017-07-25	Curtis G. Lilly, II	
	43	9470010		2016-10-18	Krong Woong	
	44	9103137		2015-08-11	Marty Williams	
	45	8381454		2013-02-26	Markus R. Robinson	
	46	D652885		2012-01-24	Pascal Frey	
	47	7533498		2009-05-19	Theodore R. Zeigler	
	48	6145525		2000-11-14	David Allan Mooney	
	49	5394897		1995-03-07	Micheal T. Ritchey	
	50	5159948		1992-11-03	Alain Moreau	
	51	4886084		1989-12-12	George W. Lawrence	
	52	4649947		1987-03-17	Keith A. Tury	

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	Examiner Name	
	Attorney Docket Number	9693-012A-CONB

	53	3955328		1076-05-11	Jeffrey Lindsay	
	54	3559353		1971-02-05	Partridge	

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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20130008478		2013-01-10	Alejandro Prieto Estebanez	
	2	20140182643		2014-07-03	Baoqing Yang	
	3	20060260666		2006-11-23	Choi	
	4	20070051399		2007-03-08	In-Young Jung	
	5	20150167343		2015-06-18	Miao Sheng Fang	
	6	20150240513		2015-08-27	Miao Sheng Fang	
	7	20180155952		2018-06-07	Jay Robert	

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	Examiner Name	
	Attorney Docket Number	9693-012A-CONB

	8	20200190844		2020-06-18	Thad B. Ribner	
	9	20170247906		2017-08-31	Theodore R. Zeigler	
	10	20080017232		2008-01-24	Theodore R. Zeigler	
	11	20070084493		2007-04-19	Jon A. Prusmack	
	12	20050204681		2005-09-22	Theodore R. Zeigler	
	13	20050204680		2005-09-22	Theodore R. Zeigler	
	14	20040173252		2004-09-09	Georges Bouchard	
	15	20120090455		2012-04-19	David Duncan	
	16	20100170162		2010-07-08	Heinz Pfeiffer	
	17	20080264462		2008-10-30	Andrew A. Rottmann	
	18	20080017233		2008-01-24	Theodore R. Zeigler	

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Case No. PGR2024-00033; Exhibit 1002

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	Art Unit	
	Examiner Name	
	Attorney Docket Number	9693-012A-CONB

	19	20070125410		2007-06-07	Marty L. Williams	
	20	20070039639		2007-02-22	David Duncan	
	21	20060283103		2006-12-21	Lian-Shun Chen	
	22	20050189009		2005-09-01	Thomas A. Walter	

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	1	CA-2837116	CA			THEODORE R. ZEIGLER		
	2	DE-29716289	DE			MEHLER		
	3	DE-29517290	DE			UMAREX		
	4	DE-29510827	DE			ROYALBEACH		
	5	FR-2705718	FR			ARNAULD THERY		

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	Art Unit	
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	6	FR-2997984	FR			LAFOUX		

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	Filing Date	2022-08-11
	First Named Inventor	Jonathan Urhausen
	Art Unit	
	Examiner Name	
	Attorney Docket Number	9693-012A-CONB

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Kelly B. Robinson/	Date (YYYY-MM-DD)	2022-09-30
Name/Print	Kelly B. Robinson	Registration Number	72960

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

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4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

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6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

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CA 2837116 A1 2012/11/29

(21) 2 837 116

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CANADIAN PATENT APPLICATION

(13) A1

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(87) Date publication PCT/PCT Publication Date: 2012/11/29
(85) Entrée phase nationale/National Entry: 2013/11/21
(86) N° demande PCT/PCT Application No.: US 2012/037407
(87) N° publication PCT/PCT Publication No.: 2012/161983
(30) Priorité/Priority: 2011/05/23 (US13/113,704)

(51) Cl.Int./Int.Cl. *E04H 15/34* (2006.01)
(71) Demandeur/Applicant:
WORLD SHELTERS, INC., US
(72) Inventeur/Inventor:
ZEIGLER, THEODORE R., US
(74) Agent: NORTON ROSE FULBRIGHT CANADA LLP/S.E.N.C.R.L., S.R.L.

(54) Titre : MODULE STRUCTUREL A BUTEE, STRUCTURE REPLIABLE ET PROCEDE POUR ERIGER UNE STRUCTURE REPLIABLE

(54) Title: STRUCTURAL MODULE WITH STOP, COLLAPSIBLE STRUCTURE, AND METHOD OF ERECTING A COLLAPSIBLE STRUCTURE

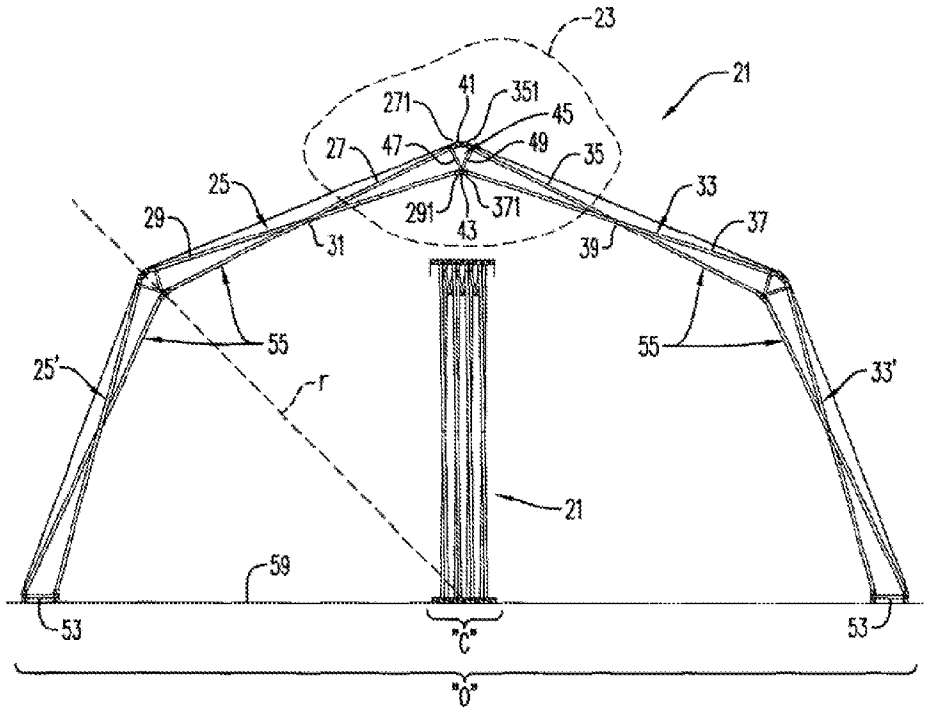


FIG. 2

(57) Abrégé/Abstract:
A structural module includes a first strut pair including a first strut and a second strut pivotably connected to each other at a first strut pair pivotable connection point, a second strut pair including a third strut and a fourth strut pivotably connected to each other

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(21) 2 837 116

(13) A1

(57) Abrégé(suite)/Abstract(continued):
at a second strut pair pivotable connection point, a first hUQ, a first end of the first strut and a first end of the third strut being pivotably connected to the first hub, a second hub, a first end of the second strut and a first end of the fourth strut being pivotably connected to the second hub, and a stop arrangement attached to at least one of the first hub, the first strut, and the third strut, the stop arrangement including an abutment end.

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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
29 November 2012 (29.11.2012)

WIPO | PCT

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11 May 2012 (11.05.2012)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
13/113,704 23 May 2011 (23.05.2011) US

(71) Applicant *(for all designated States except US)*: **WORLD SHELTERS, INC.** [US/US]; 2401 Nordok Place, Alexandria, VA 22306 (US).

(72) Inventor; and

(75) Inventor/Applicant *(for US only)*: **ZEIGLER, Theodore R.** [US/US]; 2401 Nordok Place, Alexandria, VA 22306 (US).

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(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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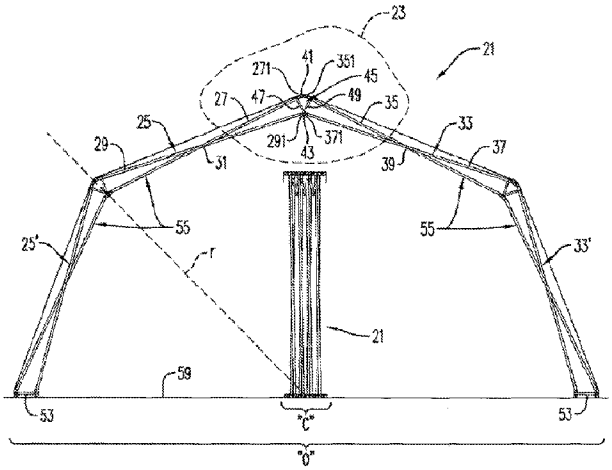


FIG. 2

(57) Abstract: A structural module includes a first strut pair including a first strut and a second strut pivotably connected to each other at a first strut pair pivotable connection point, a second strut pair including a third strut and a fourth strut pivotably connected to each other at a second strut pair pivotable connection point, a first hUQ, a first end of the first strut and a first end of the third strut being pivotably connected to the first hub, a second hub, a first end of the second strut and a first end of the fourth strut being pivotably connected to the second hub, and a stop arrangement attached to at least one of the first hub, the first strut, and the third strut, the stop arrangement including an abutment end.

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STRUCTURAL MODULE WITH STOP, COLLAPSIBLE STRUCTURE, AND METHOD OF ERECTING A COLLAPSIBLE STRUCTURE

BACKGROUND AND SUMMARY

[0001] The present invention relates to collapsible structures and, more particularly, to such structures including pivotable strut pairs that include stops for limiting pivotable movement of the struts.

[0002] A variety of types of collapsible structures (also often referred to as folding frame systems) are known. My U.S. Patent No. 7,712,261, and my U.S. Patent No. 7,556,054, which are incorporated by reference, disclose folding frame systems which can be locked in place by what can be referred to as a "tension lock". In this tension lock arrangement, the frame is locked in an open position by pivotably connected strut members that are foldable from a parallel folded condition in which the struts lie substantially against each other, through a parallel open condition in which the struts are disposed substantially end-to-end, to an open locked condition slightly beyond the latter parallel condition beyond which the struts are prevented from pivoting. In this open locked condition, when a tension member is connected between points on the two struts removed from the pivot points, the tension member will prevent the struts from passing back to the parallel open or parallel folded positions unless the tension member is released or the struts are somehow deformed.

[0003] My U.S. Patent No. 5,230,196, U.S. Patent No. 5,444,946, and U.S. Patent No. 6,141,934, which are incorporated by reference, disclose embodiments of folding frame systems with what can be referred to as "manual locks". In these systems, strut pairs are arranged in

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scissor fashion, and, when the scissors are unfolded to open the system from a closed condition, ends of the struts are connected by hub portions that are manually locked together.

[0004] To simplify the construction of and erection and break-down of folding frame systems, it is desirable to provide a folding frame system that does not require a tension lock or a manual lock.

[0005] A structural module according to an aspect of the present invention comprises a first strut pair comprising a first strut and a second strut pivotably connected to each other at a first strut pair pivotable connection point, a second strut pair comprising a third strut and a fourth strut pivotably connected to each other at a second strut pair pivotable connection point, a first hub, a first end of the first strut and a first end of the third strut being pivotably connected to the first hub, a second hub, a first end of the second strut and a first end of the fourth strut being pivotably connected to the second hub, and a stop comprising a first and a second stop strut pivotably connected to each other proximate first ends thereof to at least partially define an abutment end of the stop, the first stop strut being pivotably connected at a second end thereof to the first strut and the second stop strut being pivotably connected at a second end thereof to the third strut. The structural module is movable between a closed position in which longitudinal axes of struts of the first strut pair and the second strut pair are substantially parallel to one another and an open position in which the abutment end of the stop contacts the second hub.

[0006] A collapsible structure according to an aspect of the present invention comprises a plurality of strut pairs, each strut pair comprising a front strut and a rear strut pivotably connected to each other at a strut pair pivotable connection point, a plurality of hub pairs, each hub pair comprising an outer hub and an inner hub, at least one first hub pair of the plurality of hub pairs being connected to at least a first and a second strut pair of the plurality of strut pairs so

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that an outer hub of the at least one first hub pair is pivotably connected to front struts of the first and second strut pair and an inner hub of the at least one first hub pair is pivotably connected to rear struts of the first and second strut pair, and a stop associated with at the at least one first hub pair, the stop comprising a first and a second stop strut pivotably connected to each other proximate first ends thereof, the first and the second stop strut being pivotably connected at second ends thereof to one of the front strut and the rear strut of the first and second strut pair, respectively.

[0007] A structural module according to another aspect of the present invention comprises a first strut pair comprising a first strut and a second strut pivotably connected to each other at a first strut pair pivotable connection point, a second strut pair comprising a third strut and a fourth strut pivotably connected to each other at a second strut pair pivotable connection point, a first hub, a first end of the first strut and a first end of the third strut being pivotably connected to the first hub, a second hub, a first end of the second strut and a first end of the fourth strut being pivotably connected to the second hub, and a stop arrangement attached to at least one of the first hub, the first strut, and the third strut, the stop arrangement including an abutment end. The structural module is movable between a closed position in which longitudinal axes of struts of the first strut pair and the second strut pair are substantially parallel to one another and an open position in which the abutment end of the stop contacts the second hub.

[0008] A method of erecting a collapsible structure according to an aspect of the present invention is also provided. The method involves use of a collapsible structure comprising a plurality of strut pairs, each strut pair comprising a front strut and a rear strut pivotably connected to each other at a strut pair pivotable connection point, a plurality of hub pairs, each hub pair comprising an outer hub and an inner hub, at least one first hub pair of the plurality of

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hub pairs being connected to at least a first and a second strut pair of the plurality of strut pairs to form a series of strut pairs so that an outer hub of the at least one first hub pair is pivotably connected to front struts of the first and second strut pair and an inner hub of the at least one first hub pair is pivotably connected to rear struts of the first and second strut pair, and a stop associated with at the at least one first hub pair, the stop comprising a first and a second stop strut pivotably connected to each other proximate first ends thereof, the first and the second stop strut being pivotably connected at second ends thereof to one of the front strut and the rear strut of the first and second strut pair, respectively. The method comprises moving each strut pair from a collapsed position in which the front and rear strut of each strut pair are substantially parallel to each other and hubs of the first hub pair are at a greatest possible distance from each other to an open position in which the stop prevents hubs of the first hub pair from moving closer to each other and after each strut pair is in an open position, restraining relative movement of the strut pairs of the series of strut pairs without locking inner and outer hubs to each other.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] The features and advantages of the present invention are well understood by reading the following detailed description in conjunction with the drawings in which like numerals indicate similar elements and in which:

[0010] FIGS. 1A and 1B are perspective views of embodiments of collapsible shelters according to aspects of the present invention;

[0011] FIG. 2 is a front view of a collapsible structure according to an aspect of the present invention;

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[0012] FIG. 3 is a perspective view of a portion of a collapsible structure according to an aspect of the present invention;

[0013] FIG. 4A is a side view of a portion of a collapsible structure according to an aspect of the present invention, and FIGS. 4B and 4C are views of the collapsible structure of FIG. 4A taken at sections 4B-4B and 4C-4C, respectively;

[0014] FIGS. 5A-5D show steps in the erection of a collapsible structure in a method according to an aspect of the present invention;

[0015] FIG. 6 is a schematic view of a top of a portion of a collapsible structure according to an aspect of the present invention;

[0016] FIG. 7 is a perspective view of hubs of a hub pair according to an aspect of the present invention;

[0017] FIGS. 8A and 8B are side views of a portion of a collapsible structure according to an aspect of the present invention in an open and a folded condition;

[0018] FIGS. 9A and 9B are side views of a portion of a collapsible structure according to an another aspect of the present invention in an open and a folded condition; and

[0019] FIG. 10 is a side view of a portion of a collapsible structure according to another aspect of the present invention.

DETAILED DESCRIPTION

[0020] FIGS. 1A and 1B show embodiments of collapsible shelters 1A and 1B according to aspects of the present invention. The shelters 1A and 1B are shown with covers 2 attached. The shelters include collapsible structures 21 according to a further aspect of the present invention, an aspect of one of which is shown in FIG 2. The collapsible structures 21 facilitate construction

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of collapsible shelters such as are shown for purposes of illustration and not limitation in FIGS. 1A and 1B. A substantially infinite number of configurations of collapsible shelters can be provided using the collapsible structures 21 and/or structural modules 23 of which they are made up.

[0021] The structure 21 comprises one or more structural modules 23, certain components of which are disposed within the area denoted by a dotted line in FIG. 2. Details of portions of structural modules are shown in FIGS. 3 and 4A-4C. A structural module 23 according to an aspect of the present invention comprises a first strut pair 25 comprising a first strut 27 and a second strut 29 pivotably connected to each other at a first strut pair pivotable connection point 31. The structural module 23 further comprises a second strut pair 33 comprising a third strut 35 and a fourth strut 37 pivotably connected to each other at a second strut pair pivotable connection point 39. The pivotable connection points 31 and 39 will ordinarily be formed by pins.

[0022] The structural module 23 further comprises a first hub 41 and a second hub 43. A first end 271 of the first strut 27 and a first end 351 of the third strut 35 are pivotably connected to the first hub 41, and a first end 291 of the second strut 29 and a first end 371 of the fourth strut 37 are pivotably connected to the second hub 43.

[0023] A stop 45 is provided and can, in one embodiment, comprise a first and a second stop strut 47 and 49, respectively. As seen in FIG. 3, the first and second stop strut 47 and 49 can be pivotably connected to each other proximate first ends 471 and 491 thereof to at least partially define an abutment end 51 of the stop. The first stop strut 47 can be pivotably connected at a second end 472 thereof to the first strut 27 and the second stop strut 49 can be pivotably connected at a second end 492 thereof to the third strut 35.

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[0024] The structural module 23 is movable between a closed position (FIG. 5A and view "C" in FIG. 2) in which longitudinal axes of struts 27, 29 and 35, 37 of the first strut pair and the second strut pair 25 and 33 are substantially parallel to one another and an open position (FIG. 5D and view "O" in FIG. 2) in which the abutment end 51 of the stop 45 contacts the second hub 43. The abutment end 51 is not designed to be and does not need to be locked to the second hub 43, which facilitates erecting and folding the structure 21 and reduces the number of parts that can be damaged but, if desired, a locking connection (not shown) may be provided.

[0025] The structural module 23 is retained in an erected condition by means for limiting movement of the first and second strut pair pivotable connection points 31 and 39 relative to each other. The movement limiting means may take any number of forms but ordinarily includes at least some structure for holding distal ends 53 of a string 55 of two or more strut pairs 25, 33, 25', 33' in a fixed position relative to each other or for preventing the distal ends from moving away from each other. As seen, for example, in FIG. 5D, after a structure 21 comprising the string 55 of strut pairs is unfolded from the closed position (FIG. 5A), spread out (FIG. 5B) in a substantially flat condition, and raised from the flat, spread out condition to substantially a desired height (FIG. 5C) in which the abutment ends 51 of the stops 45 between each hub pair in the string contacts a corresponding hub, the distal ends 53 of the string 55 are fixed or prevented from moving apart, such as by securing them to the ground with stakes 57 extending through some suitable rigid or flexible attachment at the distal end of the string and thereby fixing the position of the distal ends relative to each other, by attaching a floor 59 or other tension member(s) such as cables between the distal ends to at least prevent them from moving apart, or by some combination of such illustrative measures. A floor 59 may be a rigid structure or, more typically, a flexible fabric structure that can be placed in tension. Fixing the distal ends 53 of the

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string 55 in this condition prevents the structure from automatically collapsing and functions as an alternative to, e.g., locking each strut pair in an open position. When it is desired to collapse the structure, this can be conveniently done by removing the structure for holding the distal ends of the string in the fixed position. Typically, hubs such as are used to connect two strut pairs are provided at the distal ends 53 of a string 55 of struts. A stop may be provided to limit movement of hubs of a pair of hubs at the distal ends 53 of the string 55 toward each other but, ordinarily, it is sufficient to hold the distal ends in a fixed position by, e.g., stakes, floors, and/or cables. A scissor-type stop such as can be used between two pairs of strut pairs is less useful at the distal ends 53 of the string 55 and, if a stop is provided, it is presently preferred to provide a stop such as a strut that extends from one hub to contact another hub of a hub pair at the distal end.

[0026] An outer cover 2 (FIGS. 1A and 1B) is ordinarily pre-attached to the string 55 at outer hubs along the string and functions as a tension member to assist in preventing the strut pairs of the string from opening beyond the point at which the abutment ends 51 of the stops 45 contact corresponding hubs. In addition, tension cables T (FIGS. 2 and FIGS. 4A-4C) are typically provided and extend diagonally between hubs at diagonally opposite corners of squares defined by strut pairs on adjacent strings 55 of strut pairs and transverse strut pairs 75 between the adjacent strings of strut pairs. An inner cover (not shown) is ordinarily attached to inner hubs along the string at the time of erecting the structure 21 and also functions as a tension member to assist in preventing the strut pairs of the string from opening beyond the point at which the abutment ends 51 of the stops 45 contact corresponding hubs. While the inner cover and floor or cables attached to distal ends 53 of the string 55 can be preattached to the string 55, it is presently preferred to attach these components in the field to facilitate access to the struts and hubs forming the string 55 when erecting and collapsing the structure. The first and second hubs

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41 and 43 are ordinarily provided with a centrally located hole for receiving a fastener for fastening an outer or inner cover to the hub, and with additional holes for receiving fasteners for securing the tension cables T.

[0027] As seen in a schematic top view of a string 55 of strut pairs as shown in FIG. 6, a first and a second pivot axis A1 and A2 extend through the first and the second strut pair 25 and 33 pivotable connection points 31 and 39, respectively, and a first and a second plane P1 and P2 perpendicular to the first and the second pivot axis, respectively, are parallel, or substantially so. Preferably, the struts of the strut pairs in a string 55 of strut pairs will have a certain amount of flexibility and will bend slightly so that the hubs of the hub pairs will be substantially aligned along radii r (FIG. 2) of the structure as seen in the top view of FIG. 4B which shows the first hub 41 completely obscuring the second hub (not seen in FIG. 4B) beneath it, as opposed to being offset by the thickness of the struts as shown in FIG. 6.

[0028] As seen, for example, in FIG. 2, in a given string 55 of strut pairs, the first strut pair 25 pivotable connection point 31 is ordinarily disposed along a middle half of each of the first and second struts 27 and 29, and the second strut pair 33 pivotable connection point 39 is also ordinarily disposed along a middle half of each of the third and fourth struts 35 and 37. If the pivotable connection points 31 and 39 are disposed at the midpoints of the struts 27, 29, 35, and 37, and the struts of a given strut pair are of equal length, the ends of the strut pairs will define corners of a rectangular shape when the strut pairs are in open positions. By offsetting the pivotable connection points 31 and 39 from the mid-points of the struts 27, 29, 35, and 37, when the strut pairs 25 and 33 are in an open position, the ends of the strut pairs can define corners of, for example, an isosceles trapezoidal shape as seen in FIG. 2, which facilitates forming an arch out of a string of strut pairs.

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[0029] FIG. 3 shows a hub pair with struts 27, 29, 35, and 37 attached to hubs 41 and 43 of the pair via pins 63 that extend through holes 65 (FIG. 7) in legs 67 of the hubs. Each hub of a hub pair 61 can be identical to the other hub of the pair as seen, for example, in FIG. 7. Ordinarily, each hub in each hub pair in a string of strut pairs is identical to every other hub in the string. As seen in FIGS. 3 and 7, transverse legs 69 of the hubs 41 and 43, which may be identical to the legs 65, are likewise provided with holes 71. Ends of transverse struts 73 of transverse strut pairs 75 can be pivotably attached to the transverse legs 69 via pins 77 (FIG. 3). The transverse struts 73 will ordinarily be scissor struts attached to each other by pins (not shown) like the struts of the strut pairs 25 and 33, and will ordinarily, but not necessarily, be joined to each other at midpoints of the struts so that the strut pairs form a rectangular shape when in an open position. It is also possible to omit any structure that joins the transverse struts 73, i.e., they need not be pinned together. Ordinarily, no stop struts are attached to the transverse struts 73, and the extent to which the transverse strut pair 75 can be opened will ordinarily be limited by the extent to which non-transverse strut pairs with stops 45 attached thereto permit.

[0030] FIGS. 8A and 8B show a hub pair connecting two strut pairs 25 and 33 that are both in the form of isosceles trapezoids when in the open position (FIG. 8A). The second end 472 of the first stop strut 47 is connected to the first strut 27 and the second end 492 of the second stop strut 49 is connected to the third strut 35 at the same distance from the first hub 41. The first and second stop struts 47 and 49 are both the same length. When the strut pairs are folded to a collapsed position in which the struts are all substantially parallel, as shown in FIG. 8B, the abutment end 51 of the stop 45 is disposed evenly between the first and third struts 27 and 35, facilitating closing of the structure.

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[0031] A somewhat different structure has been found to be useful when connecting two strut pairs that have different shapes when in an open position, such as different isosceles trapezoids or isosceles trapezoids attached to rectangles. FIGS. 9A and 9B show a hub pair connecting two strut pairs wherein one strut pair 25 is in the form of an isosceles trapezoid in the open position and the other strut pair 33' is in the form of a rectangle in the open position. In this arrangement, the second end 472 of the first stop strut 47 is connected to the first strut 27 and the second end 492' of the second stop strut 49' is connected to the third strut 35' at different distances from the first hub, and the first and second stop struts are different lengths. By appropriate selection of the distances, the abutment end 51' of the stop 45' can be disposed evenly between the first and third struts 27 and 35', facilitating proper closing of the structure. If some suitable measure such as altering the length of the stop struts and the point of connection of the second ends of the stop struts to the first and third struts were not taken, the stop might interfere with proper closure of the strut pairs.

[0032] As seen, for example, in FIGS. 3 and 6, the second end 472 of the first stop strut 47 can be pivotably attached to what may be denominated as a front side of the first strut 27 (to the left in FIG. 3 and to the right in FIG. 6, and the second end 492 of the second stop strut 492 can be pivotably attached to what can be denominated as a rear side of the third strut 35 (to the right in FIG. 3 and to the left in FIG. 6). It will be appreciated that which side of the strut is denominated as the "front" and which is denominated as the "rear" need not be essential to the invention and the terms are used merely to provide a frame of reference. As seen in FIG. 3, the stop 45 can comprise a spacer 79 disposed between the first ends 471 and 491 of the first and second stop strut 47 and 49. The spacer 51 can at least partially define the abutment end 51 of the stop and can contact the second hub 43 when the structural module is in the open position.

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[0033] In the embodiment of the structure 21 and structural module 23 shown in, e.g., FIGS. 2 and 3, the first and second stop strut 47 and 49 and the first and third strut 27 and 35 define a convex quadrilateral shape (e.g., a diamond) when the structural module is in the open position. Other stop structures can be provided, however, as illustrated by the stop 45' shown in the structural module 23' in FIG. 10, in which the first and second stop strut 47' and 49' and the first and third strut 27' and 35' (in the position of the second and fourth strut 29 and 37 of the embodiment of FIGS. 2 and 3) define a concave quadrilateral shape when the structural module is in the open position and the abutment surface 51' of the stop contacts the second hub 43' (in the position of the first hub 41 of the embodiment of FIGS. 2 and 3).

[0034] While a scissor-type stop such as the stop 45 shown in, e.g., FIGS. 2 and 3 or the stop 45' shown in FIG. 10 is presently preferred, other stop structures can also be provided. A stop according other aspects of the invention can be in the form of, for example, a post extending from a center of one hub of a hub pair that is intended to abut in, preferably, a non-locking fashion with the other hub of the hub pair to limit the extent to which the hubs of the hub pair can move toward each other, and thus limit the extent to which the ends of the struts of the associated strut pairs attached to the hubs of the hub pair can move toward each other. The use of the illustrated scissor structures 45 and 45', however, is believed to be useful to ensure that the abutment surface 51 and 51' of the stops contacts the associated second hub 43

[0035] While the invention has been primarily described in connection with structures 21 in the form of arches of two or more strut pairs arranged substantially in a row, other structures can be provided in which strings of two or more strut pairs comprising stops arranged between each strut pair are joined end-to-end at angles to each other, which can facilitate construction of shelters having more complex shapes than simple arches. At the intersection of the strings,

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different stop arrangements may be appropriate depending upon the particular structure sought to be constructed. Where, for example, a scissor-type stop such as is shown in FIG. 2 is not possible, a stop may be in the form of a rigid member that extends from one hub to contact another hub of a hub pair at the intersection of the strings.

[0036] A method of erecting a collapsible structure is shown in FIGS. 5A-5D and described in connection with the collapsible structure 21 of the type shown in FIG. 2. The collapsible structure 21 comprises a plurality of strut pairs 25, 33, 25', 33'. Each strut pair 25, 33, 25', 33' comprises a front strut and a rear strut pivotably connected to each other at a strut pair pivotable connection point. The structure 21 further includes a plurality of hub pairs, each hub pair comprising an outer hub 41 (FIG. 2) and an inner hub 43 (FIG. 2), at least one first hub pair of the plurality of hub pairs being connected to at least a first and a second strut pair of the plurality of strut pairs to form a series or string 55 of strut pairs so that an outer hub of the at least one first hub pair is pivotably connected to front struts of the first and second strut pair and an inner hub of the at least one first hub pair is pivotably connected to rear struts of the first and second strut pair. The structure 21 further includes a stop 45 associated with at the at least one first hub pair, the stop comprising a first and a second stop strut 47, 49 (FIG. 2) pivotably connected to each other proximate first ends thereof, the first and the second stop strut being pivotably connected at second ends thereof to one of the front strut and the rear strut of the first and second strut pair, respectively.

[0037] According to the method, each strut pair 25, 33, 25', 33' is moved from a collapsed position as seen in FIG. 5A in which the front and rear strut of each strut pair are substantially parallel to each other and hubs of the first hub pair are at a greatest possible distance from each other to an open position shown in FIGS. 5C and 5D in which the stop prevents hubs of the first

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hub pair from moving closer to each other. From the collapsed position shown in FIG. 5A, the string 55 is unfolded as shown in FIG. 5B so that the hubs of each hub pair move closer to each other, and the struts of the strut pairs are moved from being substantially parallel through a position in which they are perpendicular and toward a position in which they would again be parallel. After each strut pair 25, 33, 25', 33' is in an open position as seen in FIG. 5C, relative movement of the strut pairs of the series 55 of strut pairs is restrained without locking inner and outer hubs to each other, such as by securing distal ends 53 of the string in a fixed position relative to each other, such as by means of stakes 57, and/or by preventing movement of the distal ends away from each other, such as by means of cables and/or floors 59.

[0038] In the present application, the use of terms such as "including" is open-ended and is intended to have the same meaning as terms such as "comprising" and not preclude the presence of other structure, material, or acts. Similarly, though the use of terms such as "can" or "may" is intended to be open-ended and to reflect that structure, material, or acts are not necessary, the failure to use such terms is not intended to reflect that structure, material, or acts are essential. To the extent that structure, material, or acts are presently considered to be essential, they are identified as such.

[0039] While this invention has been illustrated and described in accordance with a preferred embodiment, it is recognized that variations and changes may be made therein without departing from the invention as set forth in the claims.

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WHAT IS CLAIMED IS

1. A structural module, comprising:

a first strut pair comprising a first strut and a second strut pivotably connected to each other at a first strut pair pivotable connection point disposed in a middle half of each of the first strut and the second strut;

a second strut pair comprising a third strut and a fourth strut pivotably connected to each other at a second strut pair pivotable connection point disposed in a middle half of each of the third strut and the fourth strut;

a first hub, a first end of the first strut and a first end of the third strut being pivotably connected to the first hub;

a second hub, a first end of the second strut and a first end of the fourth strut being pivotably connected to the second hub; and

a stop having a first end that at least partially defines an abutment end of the stop, and a second end pivotably connected to the first strut and to the third strut,

wherein the structural module is movable between a closed position in which the abutment end of the stop is spaced from the second hub and an open position in which the abutment end of the stop contacts the second hub.

2. The structural module as set forth in claim 1, comprising means for limiting movement of the first and second strut pair pivotable connection points relative to each other.

3. The structural module as set forth in claim 2, wherein the movement limiting means comprises at least one of stakes for pinning distal ends of a string of strut pairs comprising the

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first and second strut pair in fixed positions relative to each other and tension members arranged between distal ends of the string of strut pairs to prevent the distal ends from moving away from each other.

4. The structural module as set forth in claim 1, wherein a first and a second pivot axis extends through the first and the second strut pair pivotable connection points, respectively, and a first and a second plane perpendicular to the first and the second pivot axis, respectively, are parallel.

5. A structural module, comprising:

a first strut pair comprising a first strut and a second strut pivotably connected to each other at a first strut pair pivotable connection point;

a second strut pair comprising a third strut and a fourth strut pivotably connected to each other at a second strut pair pivotable connection point;

a first hub, a first end of the first strut and a first end of the third strut being pivotably connected to the first hub;

a second hub, a first end of the second strut and a first end of the fourth strut being pivotably connected to the second hub; and

a stop comprising a first and a second stop strut pivotably connected to each other proximate first ends thereof to at least partially define an abutment end of the stop, the first stop strut being pivotably connected at a second end thereof to the first strut and the second stop strut being pivotably connected at a second end thereof to the third strut,

wherein the structural module is movable between a closed position in which longitudinal axes of struts of the first strut pair and the second strut pair are substantially parallel to one

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another and an open position in which the abutment end of the stop contacts the second hub, and wherein the second end of the first stop strut is connected to the first strut and the second end of the second stop strut is connected to the third strut at different distances from the first hub.

6. The structural module as set forth in claim 5, wherein the first stop strut and the second stop strut are of different length.

7. A structural module, comprising:

a first strut pair comprising a first strut and a second strut pivotably connected to each other at a first strut pair pivotable connection point;

a second strut pair comprising a third strut and a fourth strut pivotably connected to each other at a second strut pair pivotable connection point;

a first hub, a first end of the first strut and a first end of the third strut being pivotably connected to the first hub;

a second hub, a first end of the second strut and a first end of the fourth strut being pivotably connected to the second hub; and

a stop comprising a first and a second stop strut pivotably connected to each other proximate first ends thereof to at least partially define an abutment end of the stop, the first stop strut being pivotably connected at a second end thereof to the first strut and the second stop strut being pivotably connected at a second end thereof to the third strut,

wherein the structural module is movable between a closed position in which longitudinal axes of struts of the first strut pair and the second strut pair are substantially parallel to one

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another and an open position in which the abutment end of the stop contacts the second hub, and wherein the first stop strut and the second stop strut are of different length.

8. The structural module as set forth in claim 1, wherein the stop comprises a first and a second stop strut pivotably connected to each other proximate first ends thereof to at least partially define the abutment end of the stop, the first stop strut being pivotably connected at a second end thereof to the first strut and the second stop strut being pivotably connected at a second end thereof to the third strut, wherein the structural module is movable between the closed position in which longitudinal axes of struts of the first strut pair and the second strut pair are substantially parallel to one another and the open position in which the abutment end of the stop contacts the second hub, and wherein the second end of the first stop strut is pivotably attached to a front side of the first strut and the second end of the second stop strut is pivotably attached to a rear side of the third strut.

9. The structural module as set forth in claim 8, wherein the stop comprises a spacer disposed between the first ends of the first and second stop strut.

10. The structural module as set forth in claim 9, wherein the spacer contacts the second hub when the structural module is in the open position.

11. The structural module as set forth in claim 1, wherein the stop comprises a first and a second stop strut pivotably connected to each other proximate first ends thereof to at least partially define the abutment end of the stop, the first stop strut being pivotably connected at a second end

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thereof to the first strut and the second stop strut being pivotably connected at a second end thereof to the third strut, wherein the structural module is movable between the closed position in which longitudinal axes of struts of the first strut pair and the second strut pair are substantially parallel to one another and the open position in which the abutment end of the stop contacts the second hub, and wherein the first and second stop strut and the first and third strut define a convex quadrilateral shape when the structural module is in the open position.

12. The structural module as set forth in claim 1, wherein the stop comprises a first and a second stop strut pivotably connected to each other proximate first ends thereof to at least partially define the abutment end of the stop, the first stop strut being pivotably connected at a second end thereof to the first strut and the second stop strut being pivotably connected at a second end thereof to the third strut, wherein the structural module is movable between the closed position in which longitudinal axes of struts of the first strut pair and the second strut pair are substantially parallel to one another and the open position in which the abutment end of the stop contacts the second hub, and wherein the first and second stop strut and the first and third strut define a concave quadrilateral shape when the structural module is in the open position.

13. A collapsible structure, comprising:

a plurality of strut pairs, each strut pair comprising a front strut and a rear strut pivotably connected to each other at a strut pair pivotable connection point disposed in a middle half of each of the front strut and the rear strut;

a plurality of hub pairs, each hub pair comprising an outer hub and an inner hub;

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at least one first hub pair of the plurality of hub pairs being connected to at least a first and a second strut pair of the plurality of strut pairs so that an outer hub of the at least one first hub pair is pivotably connected to front struts of the first and second strut pair and an inner hub of the at least one first hub pair is pivotably connected to rear struts of the first and second strut pair; and

a stop associated with at the at least one first hub pair, the stop comprising a first end pivotably connected to one of either the front struts of the first and second strut pair or to the rear struts of the first and second strut pair, and a second end at least partially defining an abutment end of the stop, the collapsible structure being movable to an open position in which the abutment end of the stop contacts one of the inner and outer hub of the at least one first hub pair.

14. The collapsible structure as set forth in claim 13, wherein the stop comprises a first and a second stop strut pivotably connected to each other proximate first ends thereof, the first ends of the first and second stop strut at least partially defining the abutment end of the stop, and the collapsible structure is movable between a closed position in which longitudinal axes of struts of the first strut pair and the second strut pair are substantially parallel to one another and the open position in which the abutment end of the stop contacts the one of the inner and outer hub of the at least one first hub pair.

15. The collapsible structure as set forth in claim 13, comprising at least two second hub pairs of the plurality of hub pairs each connected to a respective one of the first and the second strut pair at opposite ends of the first and second strut pair from the first hub pair, an inner hub of each of the at least two second hub pairs being pivotably connected to a rear strut of the respective one of

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the first and second strut pair and an outer hub of each of the at least two second hub pairs being pivotably connected to a respective front strut of the respective one of the first and second strut pair.

16. The collapsible structure as set forth in claim 15, comprising a stop associated with a respective one of each of the first and second hub pairs.

17. The collapsible structure as set forth in claim 13, comprising means for limiting movement of strut pair pivotable connection points relative to each other.

18. A structural module, comprising:

a first strut pair comprising a first strut and a second strut pivotably connected to each other at a first strut pair pivotable connection point disposed in a middle half of each of the first strut and the second strut;

a second strut pair comprising a third strut and a fourth strut pivotably connected to each other at a second strut pair pivotable connection point disposed in a middle half of each of the first strut and the second strut;

a first hub, a first end of the first strut and a first end of the third strut being pivotably connected to the first hub;

a second hub, a first end of the second strut and a first end of the fourth strut being pivotably connected to the second hub; and

a stop arrangement attached to at least one of the first hub, the first strut, and the third strut, the stop arrangement including an abutment end,

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wherein the structural module is movable between a closed position in which longitudinal axes of struts of the first strut pair and the second strut pair are substantially parallel to one another and an open position in which the abutment end of the stop contacts the second hub.

19. A method of erecting a collapsible structure, the collapsible structure comprising a plurality of strut pairs, each strut pair comprising a front strut and a rear strut pivotably connected to each other at a strut pair pivotable connection point disposed in a middle half of each of the first strut and the second strut, a plurality of hub pairs, each hub pair comprising an outer hub and an inner hub, at least one first hub pair of the plurality of hub pairs being connected to at least a first and a second strut pair of the plurality of strut pairs to form a series of strut pairs so that an outer hub of the at least one first hub pair is pivotably connected to front struts of the first and second strut pair and an inner hub of the at least one first hub pair is pivotably connected to rear struts of the first and second strut pair, and a stop associated with at the at least one first hub pair, the stop comprising a first end pivotably connected to one of either the front struts of the first and second strut pair or to the rear struts of the first and second strut pair and a second end at least partially defining an abutment end of the stop, the collapsible structure being movable to an open position in which the abutment end of the stop contacts one of the inner and outer hub of the at least one first hub pair, the method comprising:

moving each strut pair from a collapsed position in which the front and rear strut of each strut pair are substantially parallel to each other and hubs of the first hub pair are at a greatest possible distance from each other to an open position in which the stop prevents hubs of the first hub pair from moving closer to each other; and

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after each strut pair is in an open position, restraining relative movement of the strut pairs of the series of strut pairs without locking inner and outer hubs to each other.

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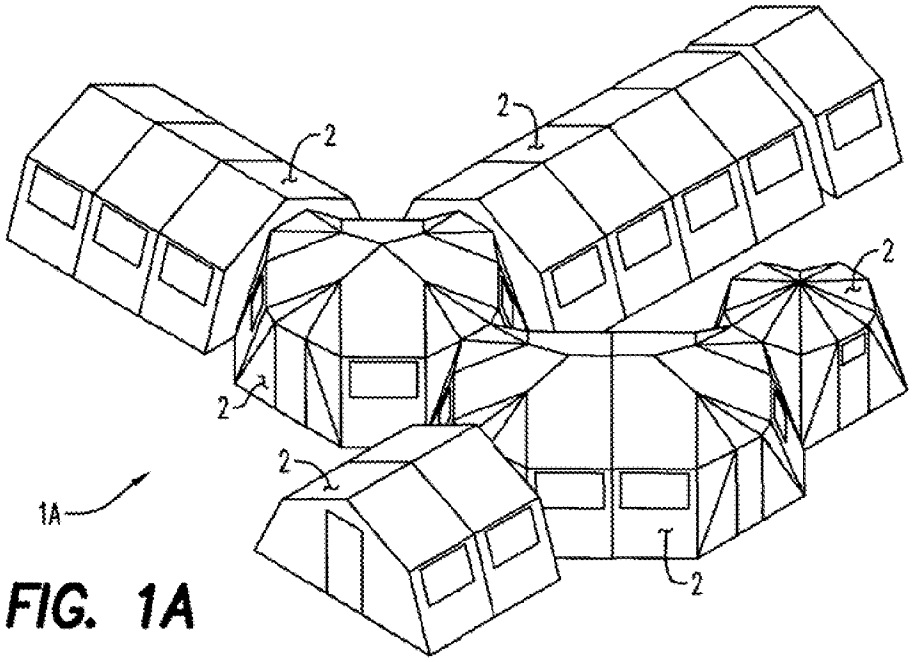


FIG. 1A

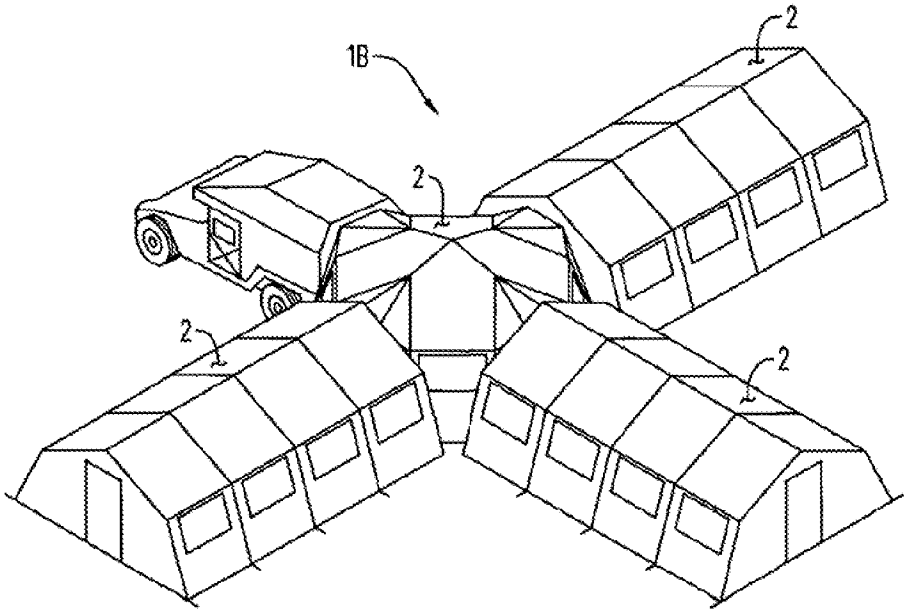


FIG. 1B

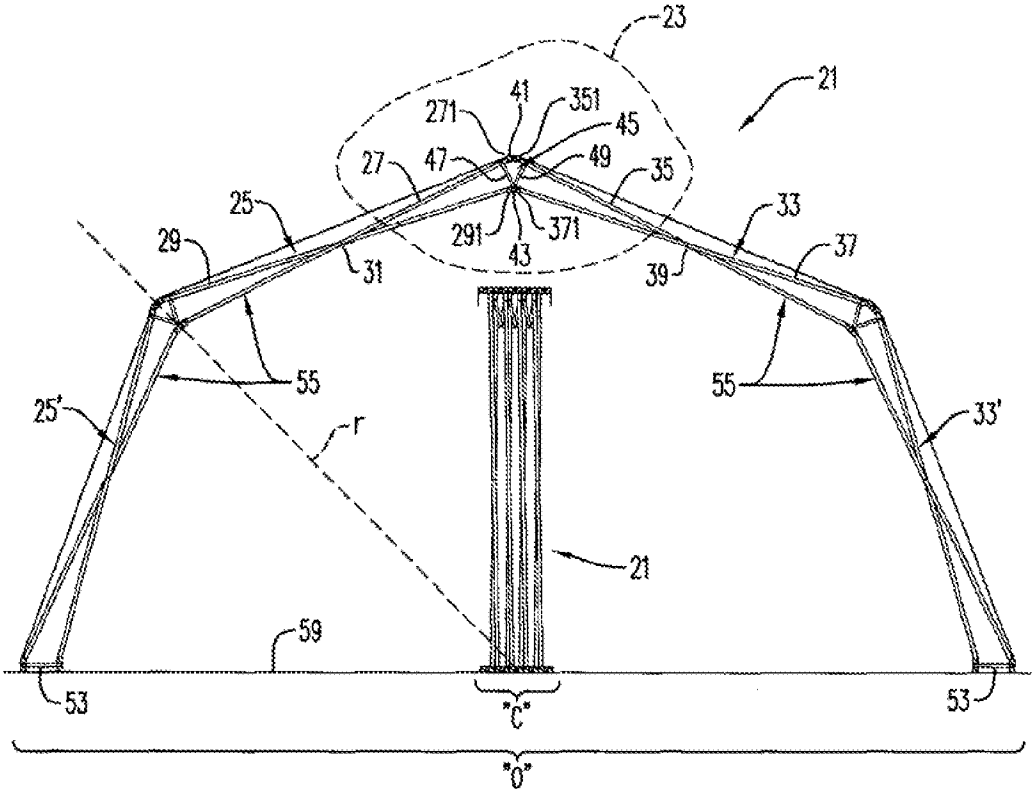

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FIG. 2

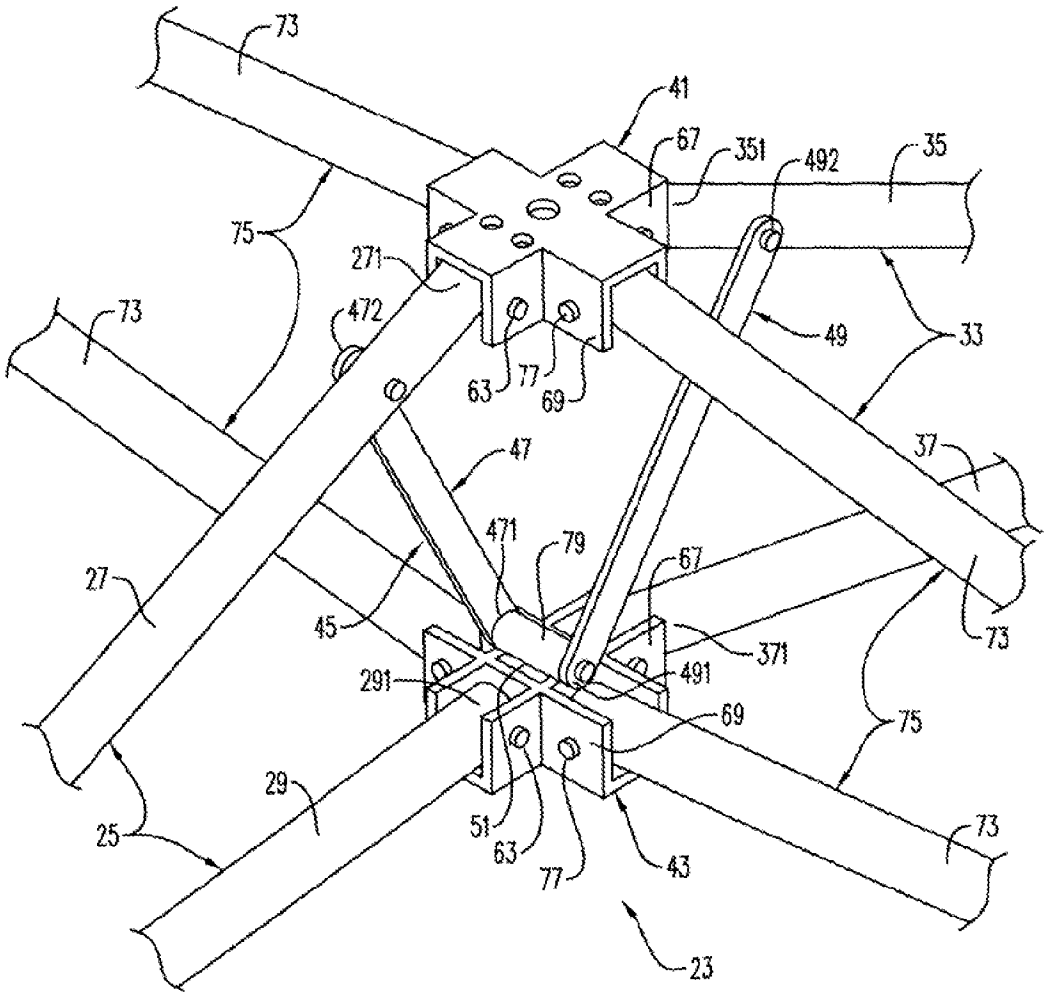

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FIG. 3

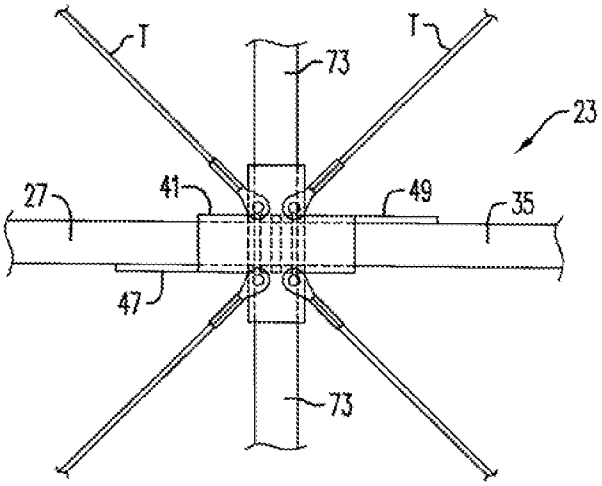


FIG. 4B

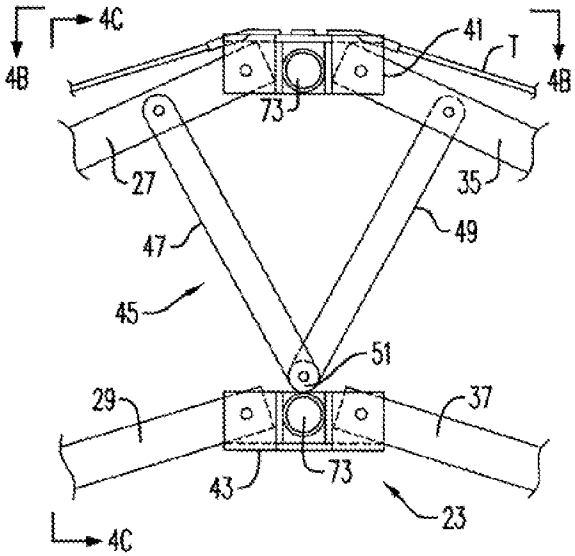


FIG. 4A

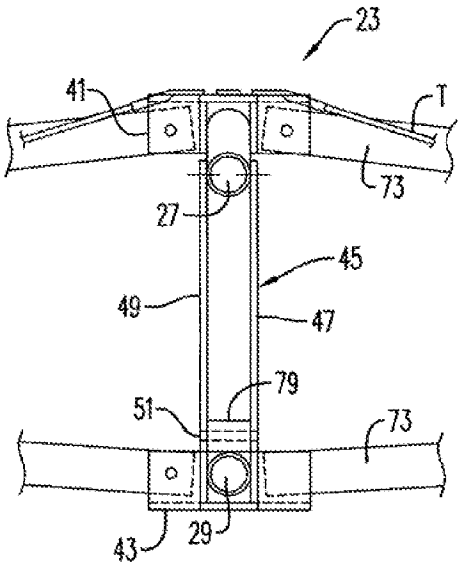


FIG. 4C

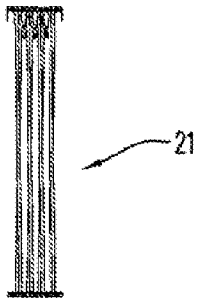


FIG. 5A

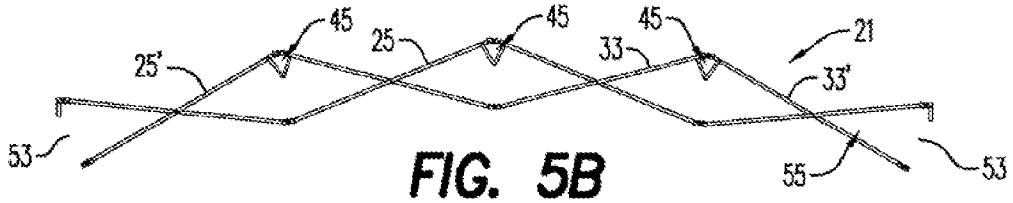


FIG. 5B

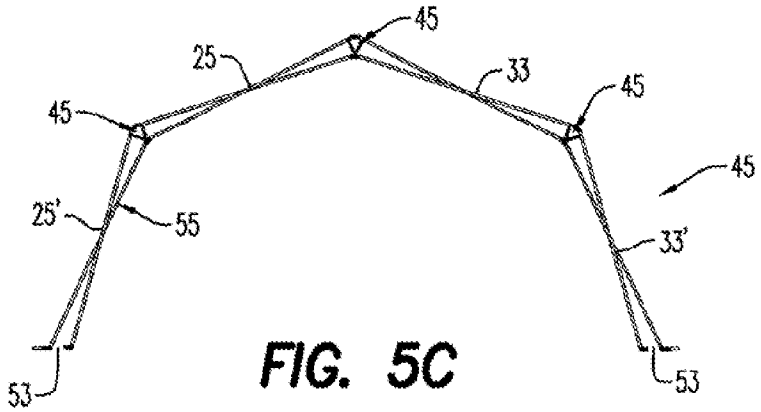


FIG. 5C

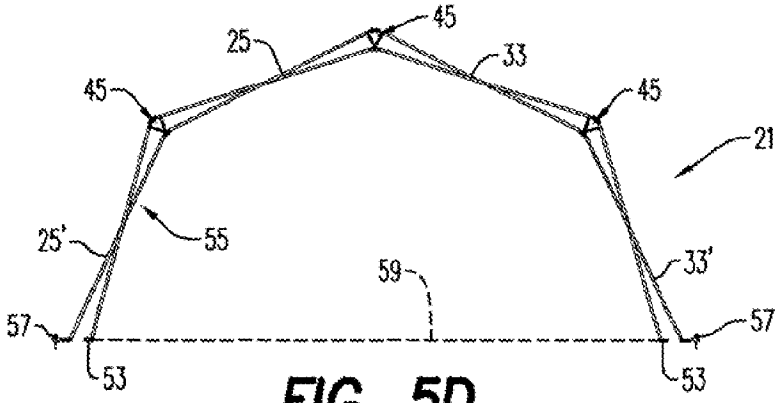


FIG. 5D

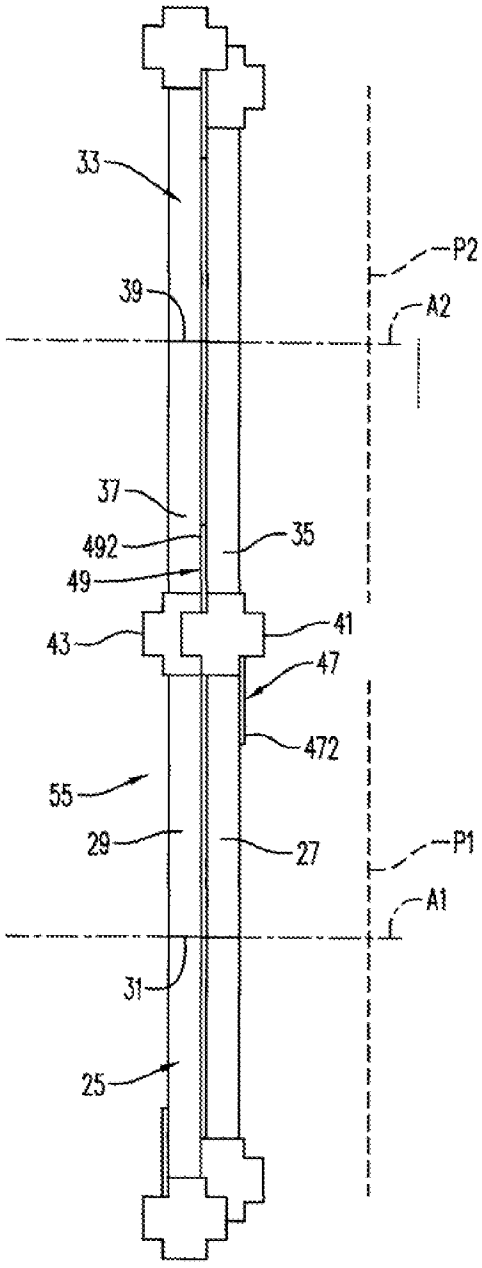


FIG. 6

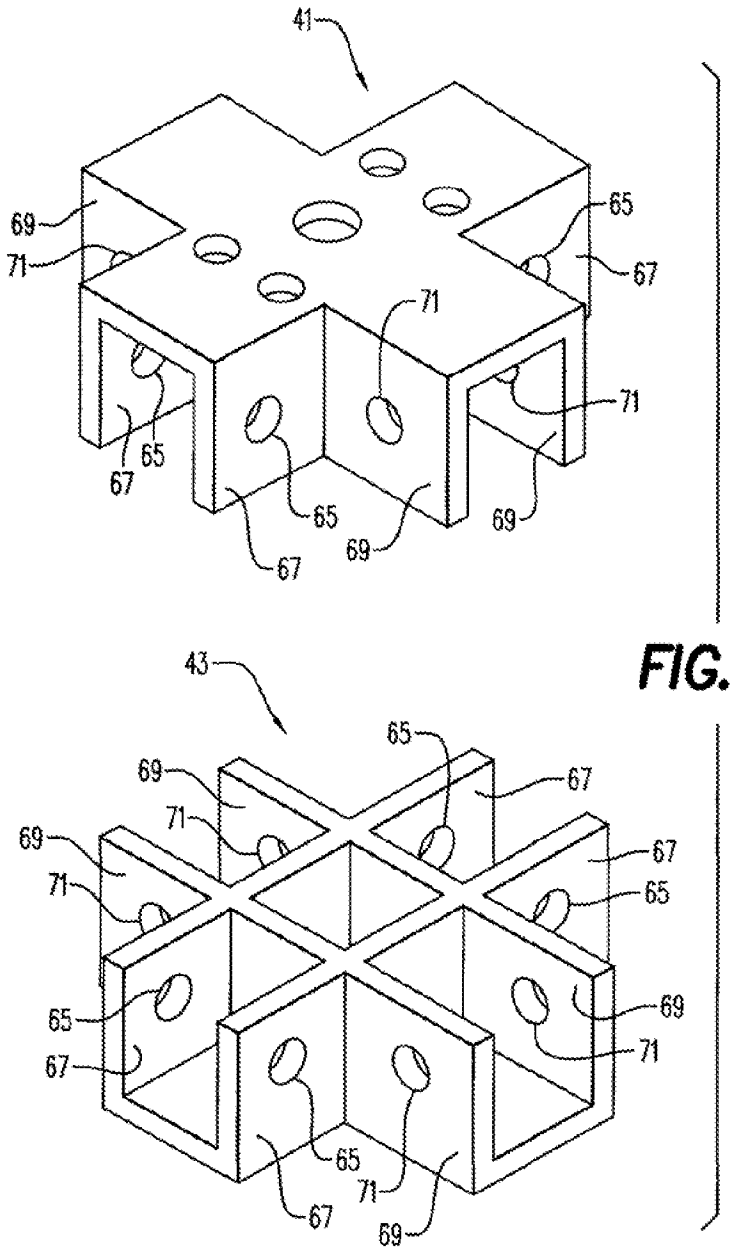

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FIG. 7

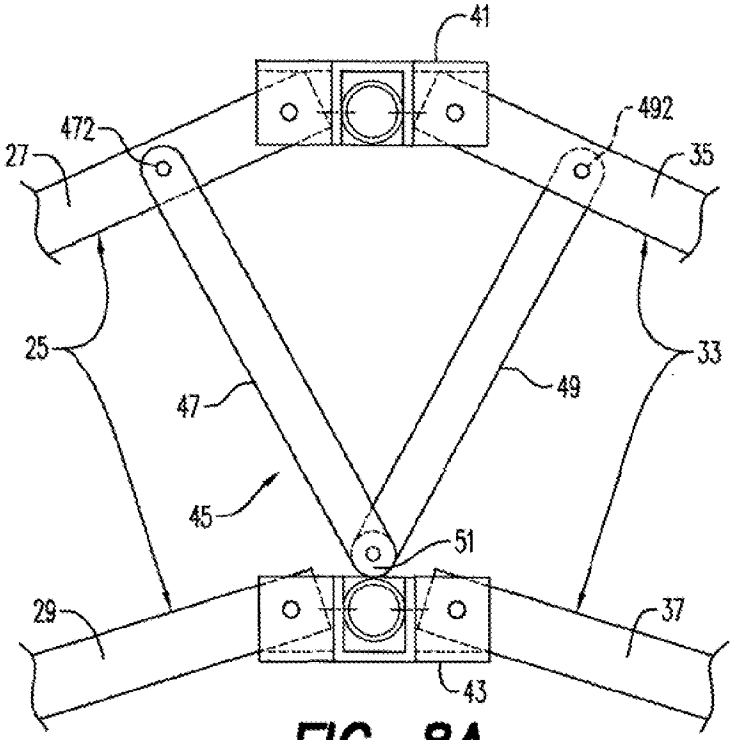

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FIG. 8A

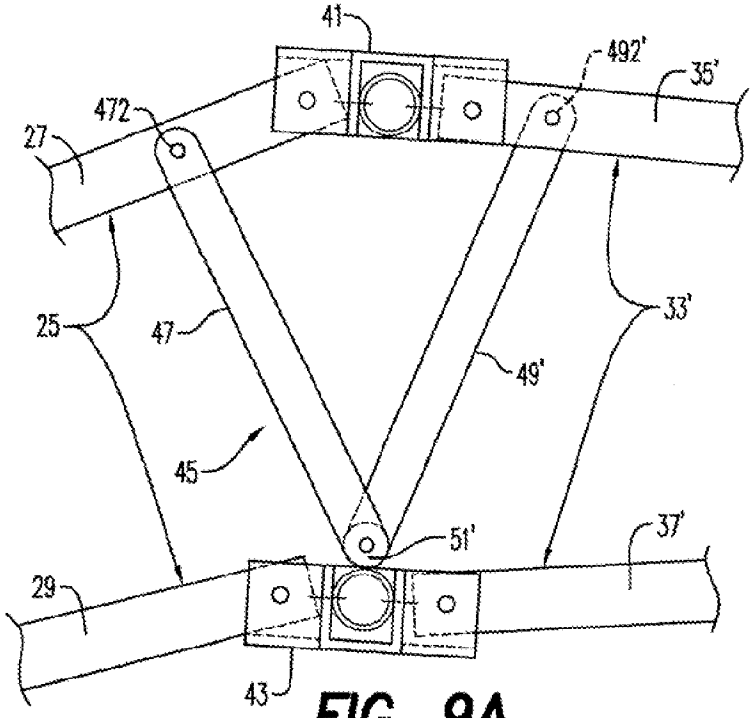

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FIG. 9A

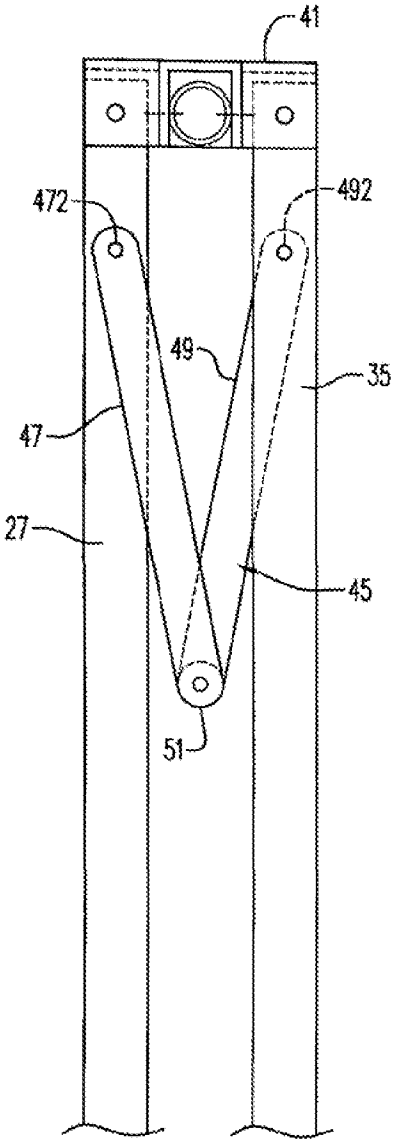


FIG. 8B

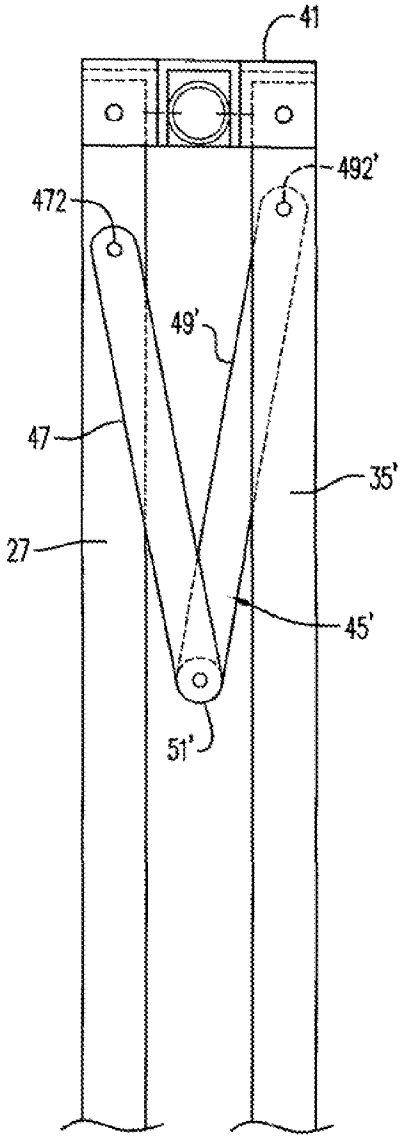


FIG. 9B

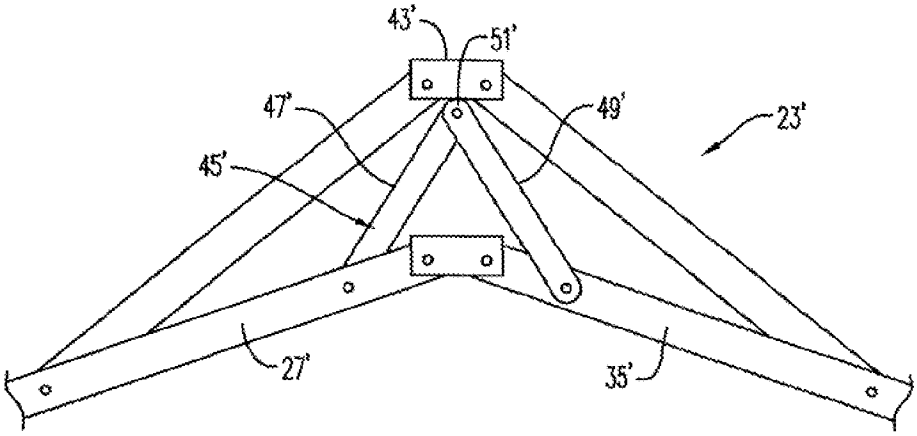


FIG. 10

PUB-NO: CA002837116A1

DOCUMENT-IDENTIFIER: CA 2837116 A1

TITLE: STRUCTURAL MODULE WITH STOP, COLLAPSIBLE STRUCTURE, AND METHOD OF ERECTING A COLLAPSIBLE STRUCTURE

PUBN-DATE: November 29, 2012

PATENT-FAMILY-ID: 47217613

INVENTOR-INFORMATION:

NAME	COUNTRY
ZEIGLER THEODORE R	US

APPLICANT:

NAME	COUNTRY
WORLD SHELTERS INC	US

APPL-NO: CA 2837116 A

APPL-DATE: May 11, 2012

PRIORITY-DATA:

PRIORITY-NO	PRIORITY-APPL-DATE
US 2012037407 W	20120511
US 201113113704 A	20110523

CPC-CURRENT:

TYPE	CPC	DATE
CPCI	E04H15/18	20130101
CPCI	E04H15/06	20130101
CPCI	E04H15/50	20130101
CPCI	E04H15/405	20130101
CPCI	E04H15/505	20130101
CPCI	E04H15/54	20130101
CPCI	E04H1/005	20130101

INT-CL-CURRENT:

TYPE	IPC	DATE
IPCP	E04H15/34	20060101

ABSTRACT:

A structural module includes a first strut pair including a first strut and a second strut pivotably connected to each other at a first strut pair pivotable connection point, a second strut pair including a third strut and a fourth strut pivotably connected to each other at a second strut pair pivotable connection point, a first hUQ, a first end of the first strut and a first end of the third strut being pivotably connected to the first hub, a second hub, a first end of the second strut and a first end of the fourth strut being pivotably connected to the second hub, and a stop arrangement attached to at least one of the first hub, the first strut, and the third strut, the stop arrangement including an abutment end.

(19) BUNDESREPUBLIK DEUTSCHLAND

DEUTSCHES PATENTAMT

(12) **Gebrauchsmuster**

(10) **DE 295 10 827 U 1**

(51) Int. Cl.[6]:
E 04 H 15/18
E 04 H 15/54
E 04 H 15/58

(11) Aktenzeichen: 295 10 827.4
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(47) Eintragungstag: 14. 9. 95
(43) Bekanntmachung im Patentblatt: 26. 10. 95

(73) Inhaber:
Royalbeach Spiel und Sportartikel Vertriebs GmbH, 83417 Kirchanschöring, DE

(74) Vertreter:
Haft, von Puttkamer, Berngruber, Czybulka, 81669 München

(54) Zelt

DE 295 10 827 U 1

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BUNDESDRUCKEREI 08. 95 510 043/276 6/5

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04.07.95

Royalbeach Spiel- und
Sportartikelvertriebs GmbH

83417 Kirchanschöring

03.07.1995
14264

Z E L T

Die Erfindung bezieht sich auf ein selbsttragendes Zelt.

Selbsttragende Zelte bestehen meist aus einer mit einer Bodenwanne versehenen kuppelförmigen Zelthülle, die an sich kreuzenden bogenförmigen Stangen aufgespannt ist. Die Stangen, die meistens aus ineinander steckbaren Rohrelementen gebildet sind, werden in Hülsen oder Stifte gesteckt, die an der Kuppelbasis der Zelthülle vorgesehen sind.

Die bekannten selbsttragenden Zelte sind für eine bestimmte Anzahl von Personen augelegt, beispielsweise zwei, vier oder sechs. Der Platz zum Kochen oder für das Gepäck, ist wenn überhaupt vorhanden, meist sehr beengt, jedenfalls bei Trekking-, Bergsport und dergleichen Zelte, bei denen es auf ein geringes Gewicht ankommt.

Aufgabe der Erfindung ist es, ein selbsttragendes Zelt bereitzustellen, das bezüglich der Zahl der aufnehmbaren Personen äußerst variabel ist und zudem ausreichend Platz zum Kochen und für das Gepäck bietet.

Dies wird erfindungsgemäß mit dem im Anspruch 1 gekennzeichneten Zelt erreicht. In den Unteransprüchen sind vorteilhafte Ausgestaltungen des erfindungsgemäßen Zeltes wiedergegeben.

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Das erfindungsgemäße Zelt besteht im einfachsten Fall aus zwei selbsttragenden Zeltteilen. Die Zelthülle jedes Zeltteils ist dabei mit einer zu einem Bogen aufspannbaren Öffnung versehen. Ferner ist eine Verbindungsvorrichtung vorgesehen, mit der die Zelthüllen der beiden Zeltteile an den zu einem Bogen aufgespannten Öffnungen unter Bildung eines Durchgangs zusammenfügbar sind.

Das eine Zeltteil kann dabei den Schlafplatz darstellen und das andere Zeltteil den Platz für das Gepäck, zum Kochen und dergleichen. Auch können beide Zeltteile als Schlafplatz ausgelegt sein, oder ein Zeltteil als Schlafplatz und das andere teilweise als Schlafplatz und zum Teil als Gepäck- oder Kochplatz.

Das erfindungsgemäße Zelt kann jedoch auch aus drei oder noch mehr Zeltteilen bestehen. In diesem Fall bildet ein Zeltteil ein zentrales Zeltteil, an das die anderen Zeltteile flügelförmig angeschlossen sind. D.h. die Zelthülle des zentralen Zeltteils ist mit einer der Anzahl der Flügelzeltteile entsprechenden jeweils zu einem Bogen aufspannbaren Öffnungen versehen. Die Zelthülle jedes Flügelzeltteils weist ihrerseits jeweils eine zu einem Bogen aufspannbare Öffnung auf, die mit der Zelthülle des zentralen Zeltteils an einer der Öffnungen des zentralen Zeltteils mit einer Verbindungsvorrichtung zusammenfügbar ist.

Die Verbindungsvorrichtung zum Zusammenfügen der Zeltteile an den bogenförmigen Öffnungen wird vorzugsweise durch einen Reißverschluß gebildet. Sie kann jedoch auch durch einen Klettverschluß, durch Schnüre oder dergleichen gebildet sein.

Um die miteinander verbundenen Zelthüllen im Bereich der Durchgangsöffnung zu einem Bogen aufzuspannen ist vorzugsweise eine bogenförmige Stange vorgesehen, die im wesent-

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lichen parallel zur bogenförmigen Durchgangsöffnung verläuft.

Die Stange wird an einer der beiden Zelthüllen im Bereich der Durchgangsöffnung fixiert. Zur Fixierung können beispielsweise an der Zelthülle im Bereich der Öffnung Schlaufen oder dergleichen vorgesehen sein, durch die die Stange gesteckt wird. Die Stange erstreckt sich also vorzugsweise außen über die Zelthülle, wobei die Zelthülle an der Stange aufgehängt wird.

Die Stange kann aus biegsamen Rohrelementen zusammengesteckt sein, beispielsweise aus faserverstärkten, Kunststoff oder Leichtmetall. Nach dem Zusammenstecken der Stange, wird sie durch die Schlaufen gesteckt und dabei entsprechend gebogen. Die beiden Enden der Stange werden in Ösen oder Stifte gesteckt, die an den gegenüberliegenden Seiten am Boden der Zelthülle vorgesehen sind.

Die Zeltteile des erfindungsgemäßen Zeltes, also das zentrale Zeltteil sowie die daran angeschlossenen Zeltflügelteile werden vorzugsweise jeweils durch eine kuppelförmige Zelthülle gebildet, die an sich kreuzenden bogenförmigen Stangen aufgespannt wird.

Die Stangen sind vorzugsweise in gleicher Weise aufgebaut, wie die vorstehend erwähnte Stange zum Aufspannen der Durchgangsöffnung, d.h. sie bestehen vorzugsweise aus zusammensteckbaren Rohrelementen, aus faserverstärktem Kunststoff oder Leichtmetall und sind mit ihren Enden in Ösen oder durch Stifte fixiert, die an der Kuppelbasis der Zelthülle des jeweiligen Zeltteils befestigt sind.

Die Stangen kreuzen sich im allgemeinen im Scheitelpunkt der kuppelförmigen Zelthülle. Es können zwei sich kreuzende Stangen vorgesehen sein. Der Winkel, mit dem sich die beiden Stangen kreuzen, kann dabei unterschiedlich sein.

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Vorzugsweise ist es beim zentralen Zeltteil ein rechter Winkel, wodurch sich eine Kuppel mit annähernd quadratischer Basisfläche ergibt. Hingegen kann bei den Flügelzeltteilen ein anderer Winkel erwünscht sein, um eine rechteckige Basisfläche mit unterschiedlichen langen Seiten zu erhalten.

Statt zwei sich kreuzenden Stangen können auch drei oder noch mehr sich im Scheitelpunkt kreuzende Stangen zum Aufspannen einer entsprechend ausgebildeten Zelthülle vorgesehen sein. Dies gilt insbesondere für das zentrale Zeltteil.

Bei einer kuppelförmigen Zelthülle sind die zu einem Bogen aufspannbaren Durchgangsöffnungen in den Wölbsegmenten der Kuppel vorgesehen. Gleiches gilt für etwaige zusätzliche Eingänge.

So kann das zentrale Zeltteil mit einem oder mehreren Eingangsöffnungen versehen sein, die jeweils in einem der Wölbsegmente der kuppelförmigen Zelthülle vorgesehen sind. Damit sind die Flügelzeltteile über das zentrale Zeltteil zugänglich.

Statt oder zusätzlich zu dem Eingang in dem zentralen Zeltteil können jedoch auch die Flügelzeltteile separate Eingänge aufweisen, beispielsweise an der von dem zentralen Zeltteil abgewandten Seite.

Die Zeltteile können eine unterschiedliche Höhe besitzen. So ist es vorteilhaft eines, insbesondere das zentrale Zeltteil mit einer größeren Höhe auszubilden, um einen bequemen Aufenthaltsplatz zu erhalten, z.B. um darin zu stehen.

Nachstehend ist eine Ausführungsform des erfindungsgemäßen Zeltes anhand der Zeichnung näher erläutert.

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Darin zeigen jeweils schematisch:

Fig. 1 und Fig. 2 eine perspektivische Ansicht des Zeltes von der einen bzw. anderen Seite; und

Fig.3 einen Schnitt durch zwei im Bereich einer Durchgangsöffnung zusammengefügte Zeltteile in etwa natürlicher Größe.

Gemäß Fig. 1 und Fig. 2 besteht das Zelt aus drei Zeltteilen 1, 2 und 3. Das Zeltteil 1 stellt das zentrale Zeltteil dar, die Zeltteile 2 und 3 bilden Flügel, die an das zentrale Zeltteil 1 angeschlossen sind.

Das zentrale Zeltteil 1 besteht aus einer kuppelförmigen Zelthülle 4 aus vier Wölbsegmenten 5 bis 8. Die Zelthülle 4 ist an den Kanten der Kuppel mit zwei bogenförmigen Stangen 9, 10 aufgespannt, die sich im Kuppelscheitel im rechten Winkel kreuzen.

Die Stange 9, 10 sind durch nicht dargestellte Schlaufen oder dergleichen Einhängevorrichtungen geführt, die an den Kuppelkanten der Zelthülle 4 angenäht sind. Mit ihren Enden sind die Stangen 9, 10 in nicht dargestellte Ösen oder Stifte gesteckt, die an der Basis der kuppelförmigen Zelthülle 4 befestigt sind.

Wie aus Fig. 2 ersichtlich, weist die Zelthülle 4 des zentralen Zeltteil 1 an den beiden benachbarten Wölbsegmenten 7, 8 je einen Eingang 11, 12 auf.

Die beiden Flügelzeltteile 2, 3 sind gleich ausgebildet, so daß nachstehend nur das Zeltteil 2 näher beschrieben wird.

Das Zeltteil 2 besteht aus einer kuppelförmigen Zelthülle 13 aus vier Wölbsegmenten 14 bis 17. Mit ihren Kanten ist

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die Zelthülle 13 an zwei bogenförmigen Stangen 18, 19 aufgespannt, die sich im Kuppelscheitel kreuzen. Die Stangen 18, 19 sind durch nicht dargestellte Schlaufen oder dergleichen Einhängevorrichtungen geführt.

Das vom zentralen Zeltteil 1 abgewandeten Segment 15 und das dem zentralen Zeltteil 1 zugewandte Segment 16 sind tunnelförmig ausgebildet. Das Wölbsegment 15 erstreckt sich dabei von den beiden Wölbkanten an den Stangen 18, 19 zu einer weiteren bogenförmigen Stange 20. Von der bogenförmigen Stange 20 verläuft ein keilförmiger Abschnitt 21 der Zelthülle 13 nach unten, wobei die eine Keilfläche 22 mit einem Eingang versehen sein kann.

Die Kuppelsegmente 16 der Zelthülle 13 der beiden Flügelzeltteile 2 und 3 sind mit einer zu einem Bogen aufspannbaren Öffnung versehen; desgleichen die den Kuppelsegmenten 16 der beiden Flügelzeltteile 2 und 3 zugewandeten benachbarten Wölbsegmente 5 und 6 der Zelthülle 4 des zentralen Zeltteil 1.

Die Segmente 5 und 6 der Zelthülle 4 des zentralen Zeltteil 1 sind mit den Segmenten 16 der Zelthülle 13 der Flügelzeltteile 2 und 3 an den aufgespannten beiden Öffnungen unter Bildung eines Durchgangs mit einem Reißverschluß zusammenfügbar.

Dazu ist, wie in Fig. 3 gezeigt, an jedem Segment 6, 16 die Schließkette 23, 24 des Reißverschlusses angenäht. Der Reißverschluß erstreckt sich also über den gesamten Bogen der Durchgangsöffnung. Die Verbindung des Segments 5 des zentralen Zeltteils mit dem benachbarten Segment 16 des Flügelzeltteils 3 erfolgt in gleicher Weise.

Gemäß Fig. 1 und 2 ist zum Aufspannen der bogenförmigen Durchgangsöffnung eine bogenförmige Stange 25 vorgesehen. Gemäß Fig. 3 ist die bogenförmige Stange 25 in einer

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Schlaufe 26 geführt, die an dem Segment 6 der Hülle 4 des zentralen Zeltteils 1 angenäht ist.

Die bogenförmige Stange 25 ist im wesentlichen senkrecht angeordnet. Dazu ist das Wölbsegment 16 der Zelthülle 13 der Flügelzeltteile 2 und 3 durch ein gewölbtes Dreieck gebildet, dessen eine Kante entlang dem Bogen 25 und dessen beide andere Kanten entlang den bogenförmigen Stangen 18, 19 verlaufen. Desgleichen bilden die Wölbsegmente 5 und 6 der Zelthülle 4 des zentralen Zeltteils 1 gewölbte Dreiecke, wobei jedes der Dreiecke mit einer Kante entlang dem Bogen 25 und mit seinen beiden anderen Kanten entlang den bogenförmigen Stangen 9 und 10 verläuft.

Gemäß Fig. 1 und 2 ist das zentrale Zeltteil 1 höher ausgebildet als die Flügelzeltteile 2 und 3.

Die Flügelzeltteile 2 und 3 können mit Abspannleinen 27 versehen sein. Die Zelthüllen 4, 13 sind normalerweise mit angenähten Bodenwannen versehen. Insbesondere bei der Zelthülle 4 des zentralen Zeltteils 1 kann jedoch auf einen Boden verzichtet werden. Für die Flügelzeltteile 2 und 3 und gegebenenfalls für das zentrale Zeltteil 1 kann ein Überzelt vorgesehen sein.

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SCHUTZANSPRÜCHE

1. Selbsttragendes Zelt, dadurch gekennzeichnet, daß es aus wenigstens zwei selbsttragenden Zeltteilen (1, 2, 3) besteht, deren Zelthülle (4, 13) jeweils mit mindestens einer zu einem Bogen aufspannbaren Öffnung versehen ist, und eine Verbindungsvorrichtung vorgesehen ist, mit der die Zelthüllen (4, 13) der beiden Zeltteile (1, 2, 3) an den aufgespannten beiden Öffnungen unter Bildung eines Durchgangs zusammenfügbar sind.

2. Zelt nach Anspruch 1, dadurch gekannzeichnet, daß die Zelteile (1, 2, 3) eine unterschiedliche Höhe aufweisen.

3. Zelt nach Anspruch 1, dadurch gekennzeichnet, daß das eine Zeltteil (1) ein zentrales Zeltteil bildet, dessen Zelthülle (4) wenigstens zwei jeweils zu einem Bogen aufspannbare Öffnungen aufweist und wenigstens zwei weitere Zellteile (2, 3) vorgesehen sind, deren Hüllen (13) jeweils wenigstens eine zu einem Bogen aufspannbare Öffnung besitzen, und eine Verbindungsvorrichtung vorgesehen ist, mit der die Zelthülle (4) des zentralen Zeltteils (1) mit der Zelthülle (13) der weiteren Zeltteile (2, 3) an den aufgespannten, einander zugewandten Öffnungen zusammenfügbar ist.

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4. Zelt nach Anspruch 3, dadurch gekennzeichnet, daß das zentrale Zeltteil (1) wenigstens eine Eingangsöffnung (11, 12) aufweist.

5. Zelt nach Anspruch 3 oder 4, dadurch gekennzeichnet, daß das zentrale Zeltteil (1) höher ist als die weiteren Zeltteile (2, 3).

6. Zelt nach einem der vorstehenden Ansprüche, dadurch gekennzeichnet, daß zum Aufspannen der Durchgangsöffnungen eine bogenförmige Stange (25) vorgesehen ist, an der wenigstens eine der beiden durch die Verbindungsvorrichtung miteinander verbundenen Zelthüllen (4, 13) fixiert ist.

7. Zelt nach einem der vorstehenden Ansprüche, dadurch gekennzeichnet, daß die Zeltteile (1, 2, 3) durch eine kuppelförmige Zelthülle (4, 13) gebildet sind, die an sich kreuzenden bogenförmigen Stangen (9, 10; 18, 19) aufgespannt ist.

8. Zelt nach Anspruch 7, dadurch gekennzeichnet, daß die zu einem Bogen aufspannbaren Öffnungen an einem der Wölbsegmente (5, 6, 16) der kuppelförmigen Zelthülle (4, 13) der Zeltteile (1, 2, 3) vorgesehen sind.

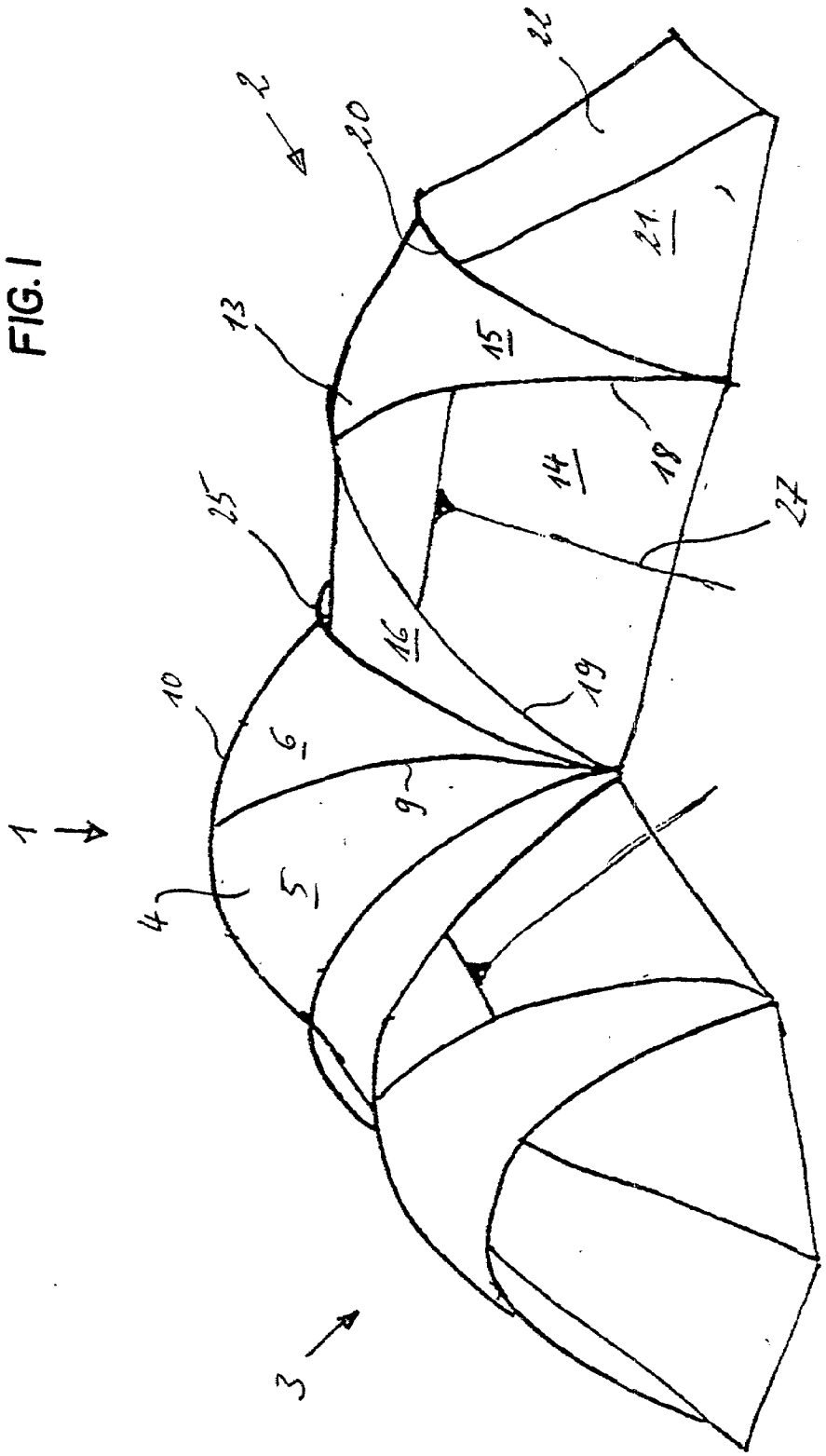
9. Zelt nach einem der vorstehenden Ansprüche, dadurch gekennzeichnet, daß die Bögen der aufgespannten Öffnungen der Zelthülle (4, 13) der Zeltteile (1, 2, 3) senkrecht angeordnet sind.

10. Zelt nach einem der vorstehenden Ansprüche, dadurch gekennzeichnet, daß die zum Zusammenfügen der Zelthüllen (4, 13) an den aufgespannten bogenförmigen Öffnungen vorgesehene Verbindungsvorrichtung durch eine Reißverschluß (23, 24) gebildet wird.

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FIG. I



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FIG. 2

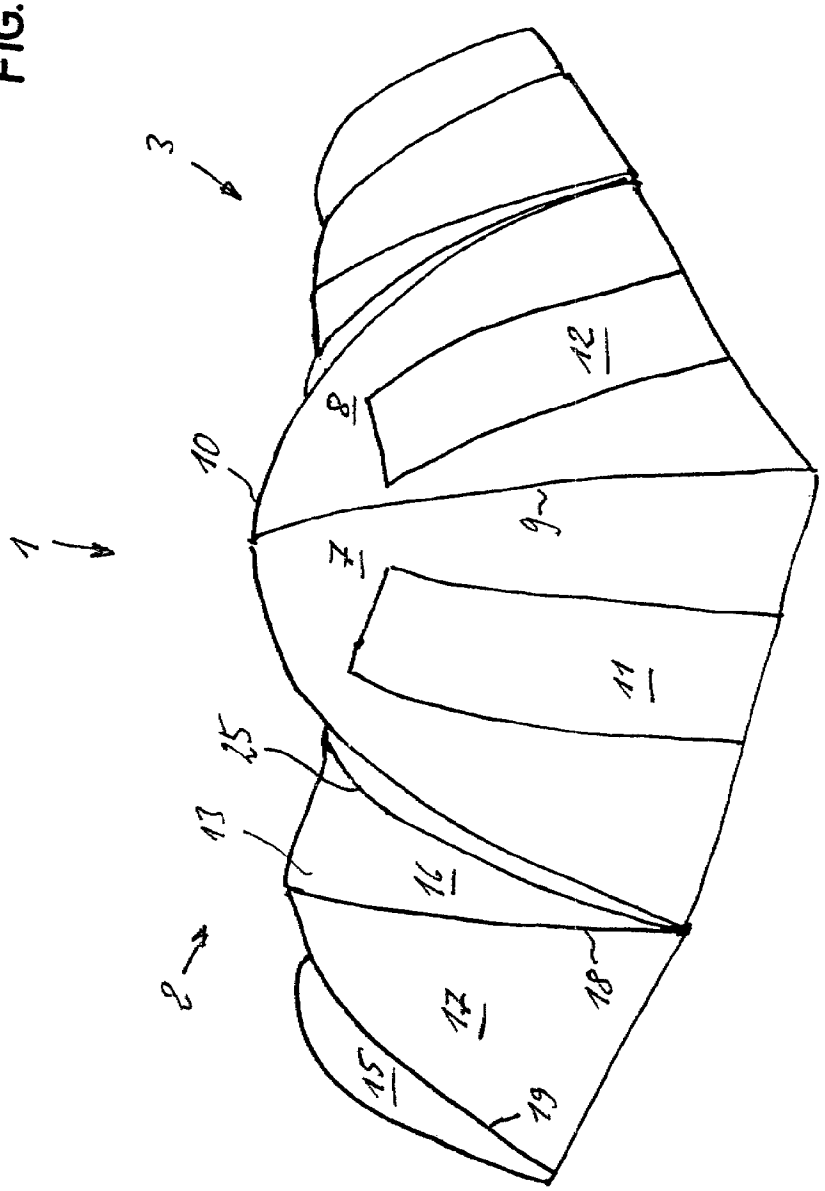
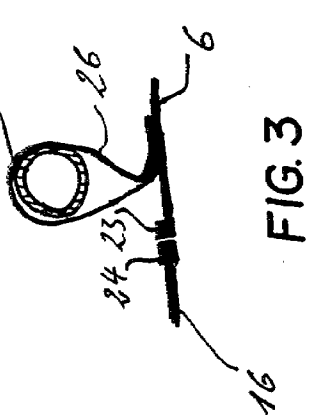


FIG. 3



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Die vorliegende Erfindung betrifft ein aus einzelnen Bauelementen in Modulbauweise aufgebautes Zelt. Aufgabe der vorliegenden Erfindung ist es, dem Benutzer ein System zur Verfügung zu stellen, mittels dessen er ein Zelt je nach Bedarf in unterschiedlichen Varianten erweitern und vergrößern kann oder auch mehrere Zelte so zu einer Baueinheit kombinieren kann, daß diese dicht, witterungsbeständig und stabil ist.

Die Lösung dieser Aufgabe liefert ein aus einzelnen Bauelementen in Modulbauweise aufgebautes Zelt mit den kennzeichnenden Merkmalen des Schutzanspruchs 1. Erfindungsgemäß umfaßt das System wenigstens ein Bauelement mit teilzylindrischer Form und halbkreisförmigem oder annähernd halbkreisförmigem Querschnitt, an dem im stirnseitigen Bereich entlang der bogenförmigen Nahtlinien jeweils Reißverschlüsse vorgesehen sind und wenigstens ein Bauelement in Form einer Apsis, dessen stirnseitige bogenförmige Nahtlinie ebenfalls mit einem Reißverschluß versehen ist, der der Nahtlinie des teilzylindrischen Bauelements entspricht und mit diesem verbindbar ist.

Erfindungsgemäß ist es möglich, mehrere Bauelemente mit teilzylindrischer Form in axialer Richtung, über die an den Reißverschlüssen vorgesehenen bogenförmigen Nahtlinien, miteinander zu einem längeren Zelt zu verbinden und an einer oder an beiden Stirnseiten der halbkreisförmigen Bauelemente weitere Bauelemente in Form einer Apsis anzuschließen, die ebenfalls über Reißverschlüsse mit den erstgenannten Bauelementen verbunden werden. Dies ist problemlos möglich, da die bogenförmigen Nahtlinien der halbkreisförmigen Bauelemente und die bogenförmigen Nahtlinien der apsisförmigen Bauelemente und die entsprechenden Reißverschlüsse zusammenpassen.

Vorzugsweise ist gemäß einer Weiterbildung der Erfindung vorgesehen, weitere etwa igluförmige Bauelemente zu verwenden, die annähernd die Grundform einer quadratischen

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Pyramide haben, mit einem quadratischen Grundriß, aber gekrümmten Seitenflächen. Dabei haben wenigstens zwei der gekrümmten Seitenflächen, die einander gegenüber liegen, ebenfalls bogenförmige Nahtlinien mit Reißverschlüssen, die in der Umrißform den Nahtlinien der halbzylindrischen Bauelemente (tunnelförmige Bauelemente) und den Nahtlinien der apsisförmigen Bauelemente entsprechen. Dadurch kann man an die igluförmigen Bauelemente über Reißverschlüsse entweder apsisförmige Bauelemente anschließen, um so ein Vorzelt zu schaffen, das als Stauraum dient und an dieser Seite einen Abschluß für die Baueinheit bildet. Man kann aber auch igluförmige Bauelemente an die tunnelförmigen halbzylindrischen Bauelemente anbauen. Dadurch ist es möglich zwei igluförmige Bauelemente, die eine größere Bauhöhe aufweisen können als die tunnelförmigen Bauelemente, über tunnelförmige Bauelemente miteinander zu verbinden. Es ist aber auch möglich zwei igluförmige Bauelemente entlang ihrer bogenförmigen, mit Reißverschluß versehenen, Nahtlinien direkt miteinander zu verbinden. Das System bietet also vielfältige Kombinationsmöglichkeiten. Beispielsweise können unterschiedliche Personen jeweils mit igluförmigen, tunnelförmigen und apsisförmigen Bauelementen reisen, die in sich eine geschlossene Einheit bilden und bei Bedarf könnte man diese mit anderen Bauelementen der gleichen Bauart, die andere Reisende mit sich führen, kombinieren, so daß sich aus mehreren Einzelzelten Zeltgruppen oder ganze Zeltstädte aufbauen lassen, die in sich geschlossene und witterungsbeständige Baueinheiten bilden. Vorzugsweise weisen die igluförmigen und/oder die halbzylindrischen (tunnelförmigen) Bauelemente jeweils Innenzelte auf, die als Schlafkabinen dienen.

Die genannten Bauelemente kann man mit weiteren Bauelementen kombinieren, die ebenfalls eine Igluform aufweisen, aber als Eckmodule dienen, wobei diese an zwei benachbarten Seiten jeweils bogenförmige Nahtlinien mit Reißverschlüssen aufweisen, die in der Umrißform den Nahtlinien der anderen Bauelemente entsprechen. Unter Zuhilfenahme dieser Eckmodule

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ist es dann möglich, weitere Bauelemente anzuschließen und Kombinationen von Zeltbaueinheiten zu schaffen, deren Achsen im rechten Winkel zueinander stehen.

Gemäß einer bevorzugten Weiterbildung der Erfindung weisen insbesondere die teilzylindrischen (tunnelförmigen) Bauelemente in Achsrichtung ein bestimmtes Rastermaß auf, bzw. ihre Länge beträgt in Achsrichtung ein ganzzahliges Vielfaches dieses Rastermaßes. Wenn diese Bauelemente als Schlafkabinen mit Innenzelt dienen, ergibt sich dann eine Einerschlafkabine, wenn die Länge in Achsrichtung dem Rastermaß entspricht, eine Zweierschlafkabine hat dann das doppelte Rastermaß usw.

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Im folgenden wird die vorliegende Erfindung anhand von Ausführungsbeispielen näher beschrieben. Dabei zeigen

Fig. 1 eine Ansicht eines ersten Zeltbauelements in Form einer Apsis

Fig. 2 eine Ansicht eines zweiten Zeltbauelements in Form eines Tunnels

Fig. 3 eine Ansicht eines dritten Zeltbaulements in Form eines Iglus

Fig. 4 eine Ansicht eines vierten Zeltbauelements in Form eines Eckiglus

Fig. 5 eine Ansicht einer Kombination aus verschiedenen Zeltbauelementen der oben genannten Art zu einer Baueinheit

Fig. 6 eine Ansicht einer Kombination aus verschiedenen Zeltbauelementen der oben genannten Art zu einer Baueinheit gemäß einer alternativen Variante

Fig. 7 ein weiteres Bauelement für Zelte gemäß einer alternativen Ausführungsform der Erfindung

Fig. 8 eine Ansicht eines weiteren Zeltbauelements gemäß einer alternativen Ausführungsform der Erfindung

Fig. 9 eine Ansicht eines weiteren Zeltbauelements in Tunnelform gemäß einer alternativen Variante

Fig. 10 eine Ansicht eines weiteren Zeltbauelements

Fig. 11 eine Ansicht eines weiteren Zeltbauelements

Fig. 12 eine Kombination mehrerer Bauelemente der oben genannten Art zu einer Baueinheit

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Zunächst wird auf die Fig. 1-6 Bezug genommen, in denen Bauelemente für Zelte dargestellt sind, die zu einem System gehören und in einer modularen Bauweise zu verschiedensten Baueinheiten in zügiger und einfacher Montage zusammensetzbar sind und auch entsprechend einfach demontierbar sind. Dabei zeigt Fig. 1 ein Bauelement 1, das die Form einer Apsis hat und bei einer größeren Zeltbaueinheit als Endstück dient. An der einen Seite hat dieses Bauelement 1 eine halbkreisförmige Nahtlinie 1a, die mit einem Reißverschluß 1b versehen ist, so daß hier ein Anschluß an verschiedene andere Bauelemente möglich ist, worauf nachfolgend noch näher eingegangen wird.

Fig. 2 zeigt ein weiteres Bauelement 2, das eine Tunnelform hat, das heißt also etwa die Form eines Teilzylinders, wobei rechts und links jeweils Nahtlinien 2a, 2b bestehen, die etwa eine Halbkreisform haben und in der Form einer Nahtlinie 1a eines Bauelements 1 in Apsisform entsprechen. Damit kann an ein Bauelement 2 in Tunnelform sowohl rechts als auch links bei Bedarf jeweils ein Bauelement 1 in Form einer Apsis angeschlossen werden. Entsprechend sind an dem Tunnelbaulement 2 entlang beider Nahtlinien 2a, 2b jeweils Reißverschlüsse 2c, 2d vorhanden.

Das Bauelement 3 gemäß Fig. 3 hat etwa die Form eines Iglus, dabei sind rechts und links jeweils halbkreisbogenförmige Nahtlinien 3a, 3b vorhanden, die im Umriß den Nahtlinien 2a, 2b der Bauelemente 2 in Tunnelform und auch den Nahtlinien 1a der Bauelemente 1 in Apsisform entsprechen. Damit ist es möglich an ein Bauelement 3 in Igluform entweder rechts oder links oder auch rechts und links ein abschließendes Bauelement 1 in Apsisform anzubauen. Ebensogut ist es möglich, an ein Bauelement 3 in Igluform zur Verlängerung oder zum Bau einer größeren Baueinheit rechts und/oder links ein Bauelement 2 in Tunnelform anzubauen. Ebensogut können Kombinationen geschaffen werden, bei denen an ein Bauelement 3 in Igluform rechts ein Bauelement 1 in Apsisform angebaut wird und links ein Bauelement 2 in Tunnelform oder umgekehrt. Ebensogut können auch an ein igluförmiges

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Bauelement 3 an beiden Seiten Bauelemente 2 in Tunnelform angeschlossen werden und dann in Verlängerung dieser wieder weitere Bauelemente 3 in Igluform angebaut werden, die dann, je nach Bedarf, endseitig durch Bauelemente 1 in Apsisform abgeschlossen werden. Dieses System ist dabei in Längsrichtung beliebig verlängerbar. Das Bauelement 3 in Igluform hat an beiden Seiten im Bereich der Nahtlinien 3a, 3b entsprechende Reißverschlüsse 3c, 3d wie die übrigen Bauelemente.

Eine mögliche Kombination von Bauelementen 1, 2, 3 der vorgenannten Art ist in Fig. 5 schematisch dargestellt. Wie man sieht, besteht die Baueinheit aus einem zentralen Bauelement 3 in Igluform, das ein Innenzelt 30 mit Boden enthält und somit als Schlafzelt dient. An der Vorder- und an der Rückseite des igluförmigen Bauelements 3 ist jeweils ein zu öffnender Reißverschluß, so daß man von beiden Seiten her in das Zelt in Längsrichtung und somit in Achsrichtung der in Fig. 5 dargestellten Baueinheit gelangen kann. Dagegen ist das igluförmige Bauelement 3 in Richtung senkrecht zu dieser Längsachsenrichtung geschlossen. Es ergeben sich also zwei Eingänge vorn und hinten an dem igluförmigen Bauelement 3, wobei an den einen Eingang das tunnelförmige Bauelement 2 angeschlossen ist und an den anderen Eingang das apsisförmige Bauelement 1 angeschlossen ist. Das apsisförmige Bauelement 1 an der einen Seite dient somit als überdachter Stauraum und Vorzelt. Das an der anderen Seite angeschlossene tunnelförmige Bauelement 2 bildet ein weiteres, etwas größeres teilzylindrisches Vorzelt, das zwar im allgemeinen keinen Zeltboden aufweist, aber als weiterer Aufenthaltsraum dient. Dabei kann das tunnelförmige Bauelement 2 mit weiteren Reißverschlüssen versehen sein, so daß ein Öffnen der Reißverschlüsse und Hochziehen der Zeltplane möglich ist und sich zur Seite hin ein Fenster 2e ergibt, wie in Fig. 5 dargestellt ist.

Weiter in Längsrichtung ist anschließend an das tunnelförmige Bauelement 2 ein Bauelement 1 in Form einer Apsis vorgesehen,

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das zu dieser Seite hin den Abschluß der Baueinheit bildet und das tunnelförmige Bauelement 2 in Längsachsenrichtung der gesamten Baueinheit verlängert und damit weiteren Stauraum schafft. Auch dieses Bauelement 1 in Form einer Apsis hat ein Fenster 1c bzw. eine Tür, wobei seitlich entlang der Nahtlinie 1d an beiden Seiten jeweils ein Reißverschluß vorgesehen ist, so daß man dort den Reißverschluß hochziehen und die Zeltbahn aufrollen kann. Diese stirnseitige Öffnung, die durch die Tür 1c gegeben ist, kann als Eingang für die gesamte Zeltbaueinheit dienen. Ebensogut kann man aber auch das entsprechende als Apsis ausgebildete Bauelement 1 auf der gegenüberliegenden Stirnseite als Eingang benutzen. Wahlweise könnte man auch das Fenster 2e an der Seite des Bauelements 2 in Tunnelform als Eingang benutzen.

Ein weiteres Bauelement 4 in Igluform, das als Eckmodul dient, ist in Fig. 4 dargestellt. Wie man sieht, ist die Grundform dieses Bauelements 4 ähnlich derjenigen des ebenfalls iglufömigen Bauelements 3, jedoch hat das iglufömige Eckmodul-Bauelement 4 nicht an zwei Seiten, die gegenüber liegen, sondern an zwei benachbarten Seiten jeweils eine bogenförmige Öffnung 4a mit Reißverschlüssen 4b. Dadurch ist es möglich, das Eckmodul 4 jeweils über Eck, also in einem 90°-Winkel über Reißverschlüsse mit je einem tunnelförmigen Bauelement 2 zu kombinieren, um dann gegebenenfalls wiederum weitere Bauelemente z.B. in Igluform anzuschließen. Das Eckmodul 4 hat dann zwei freibleibende Seiten, an die kein tunnelförmiges Bauelement angeschlossen ist und die mit Reißverschlüssen versehen sein können, so daß sie dort das Öffnen ermöglichen und sich so eine weitere Einstiegsöffnung 4c ergibt.

Fig. 6 zeigt eine beispielhafte Kombination verschiedener Bauelemente unter Verwendung auch der iglufömigen Eckmodule 4. Wie man sieht ist die Baueinheit über Eck im rechten Winkel gebaut, wobei als zentrales Bauelement das iglufömige Eckmodul 4 dient. An dieses schließt sich in der Zeichnung nach rechts hin ein tunnelförmiges Bauelement 2 an. An dieses

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tunnelförmige Bauelement 2 schließt sich wiederum ein apsisförmiges Bauelement 1 an, wobei durch Öffnen dessen stirnseitiger Reißverschlüsse hier endseitig ein Eingang für die gesamte Baueinheit gegeben ist. Rechtwinklig zu dem tunnelförmigen Bauelement 2 schließt sich an das Eckmodul 4 an der anderen Seite ein igluförmiges Bauelement 3 an, mit einem Innenzelt, das als Schlafkabine dient. Stirnseitig ist dieses igluförmige Bauelement 3 dann wiederum durch ein apsisförmiges Bauelement 1 abgeschlossen, das eine durch Reißverschluß zu öffnende Tür 1c hat, die als Eingang dient, wobei der Benutzer ebensogut die Apsis 1 am anderen Ende als Eingang benutzen kann.

Ein weiteres erfindungsgemäßes System von modularen Bauelementen für Zelte wird nachfolgend unter Bezugnahme auf die Fig. 7-12 näher beschrieben. Ähnlich wie bei dem vorbeschriebenen System gemäß den Fig. 1-6 ist auch hier wiederum ein Bauelement 7 in Form einer Apsis vorgesehen, das in Fig. 7 für sich dargestellt ist. Dieses apsisförmige Bauelement 7 dient als stirnseitiger Abschluß für eine Baueinheit von Zelten. Diese Apsis hat zum einen zwei Reißverschlüsse, die hochgezogen werden können, so daß sich eine Türöffnung ergibt, die als Einstieg für die gesamte Zeltbaueinheit dient. Zum anderen ist an der bogenförmigen Nahtlinie, der Tür gegenüberliegend, ein Reißverschluß für den Anschluß z.B. an ein tunnelförmiges Bauelement 9 gegeben. Die bogenförmige Nahtlinie der Apsis 7 entspricht in ihrem Verlauf und ihren Abmessungen aber nicht nur der Nahtlinie des tunnelförmigen Bauelements 9 sondern auch derjenigen der Schlafkabine 8, die in Fig. 8 gezeigt ist. Diese Schlafkabine 8 hat etwa die Form eines Halbzylinders, so daß sich an beiden stirnseitigen Enden jeweils bogenförmige Nahtlinien mit Reißverschlüssen ergeben, die den Anschluß eines apsisförmigen Bauelements 7 oder eines tunnelförmigen Bauelements 9 ermöglichen. Die Schlafkabine 8 hat Befestigungsmöglichkeiten für ein Innenzelt mit Boden, während tunnelförmiges Bauelement 9 und apsisförmiges

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Bauelement 7 in der Regel nur als Überdachung für Stauraum dienen und keinen Zeltboden aufweisen.

Wie man aus der Darstellung gemäß Fig. 10 erkennt, gibt es auch Schlafkabinen 10, die in der Form ebenfalls halbzylinderförmig sind, wie die Schlafkabinen 8, jedoch eine größere Breite aufweisen. Die Breiten der Schlafkabinen 8, 10 in Achsrichtung werden vorzugsweise so gewählt, daß sie ein Vielfaches eines Rastermaßes betragen, so daß sich dann Schlafkabinen für eine Person, zwei Personen, drei Personen etc. ergeben. Die in Fig. 8 dargestellte Schlafkabine 8 eignet sich zum Beispiel für zwei Personen, die in Fig. 10 dargestellte Schlafkabine 10 für drei Personen.

Ebenso sind von den Tunnelmodulen 9 auch in Achsrichtung verschieden lange Bauelemente vorgesehen. Figur 9 zeigt ein längeres tunnelförmiges Bauelement 9, wohingegen Fig. 11 ein kürzeres tunnelförmiges Bauelement 11 zeigt. Alle tunnelförmigen Bauelemente 9, 11 sind an ihren beiden Stirnseiten entlang dem Verlauf der bogenförmigen Nahtlinie jeweils mit Reißverschlüssen versehen, so daß die Kombination mit apsisförmigen Bauelementen 7 oder Schlafkabinen 8, 10 möglich ist. Es können aber auch mehrere tunnelförmige Bauelemente 9, 11 bei Bedarf in Längsrichtung hintereinander geschaltet werden. Die tunnelförmigen Bauelemente 9 können weitere Reißverschlüsse aufweisen an der Seite, so daß die Zeltbahn dort geöffnet und aufgerollt werden kann für eine seitliche Einstiegsöffnung oder ein Fenster. Man kann auch anstatt die Zeltbahn aufzurollen zwei Stangen verwenden, die man senkrecht aufstellt und an denen man die Enden der geöffneten Zeltbahn einhängt, so daß diese Zeltbahn dann ein waagerechtes Vordach bildet, unter dem man sich gegen Regen geschützt aufhalten kann. Bei der in den Fig. 7-12 dargestellten Variante der Erfindung weisen jeweils die tunnelförmigen Bauelemente 9, 11 und die Schlafkabinen 8, 10 und die apsisförmigen Bauelemente 7 eine gleiche Höhe auf, so daß die durch Kombinieren sich ergebenden länglichen Zeltbaueinheiten insgesamt immer etwa gleiche Höhe aufweisen.

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Fig. 12 zeigt eine solche Kombination mehrerer Bauelemente 7, 11, 8, 9, 7 als Beispiel. Es bieten sich beliebige Variations- und Erweiterungsmöglichkeiten. Bei dieser Variante der Erfindung haben die Schlafkabinen 8, 10 und tunnelförmigen Bauelemente 9, 11 immer eine halbzylindrische oder teilzylindrische Form. Im Gegensatz dazu ist bei der Variante gemäß den Fig. 1-6 das igluförmige Bauelement 3 und auch das Eckmodul 4 etwa pyramidal, wobei es sich um Pyramiden mit gekrümmten und nicht ebenen Seitenflächen handelt. Die hier ebenfalls halbzylindrischen oder teilzylindrischen tunnelförmigen Bauelemente 2 haben daher, wie man aus Fig. 5 erkennt, eine Firstlinie, die niedriger liegt als die Spitze eines igluförmigen Bauelements 3 oder eines Eckmoduls 4. Die Nahtlinie des igluförmigen Bauelements 3 für den Anbau z.B. eines tunnelförmigen Bauelements 2 oder eines apsisförmigen Bauelements 1 entspricht in ihrem höchsten Punkt der Firstlinie des tunnelförmigen Bauelements 2, und liegt damit unter der Spitze des igluförmigen Bauelements 3, dadurch ergeben sich durch Kombination, wie man in den Fig. 5 und 6 erkennen kann, Baueinheiten, die im Bereich der tunnelförmigen Bauelemente 2 niedriger und im Bereich der igluförmigen Bauelemente 3 und der Eckmodule 4 in der Spitze höher sind und die tunnelförmigen Bauelemente 2 überragen.

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Schutzansprüche:

1. Aus einzelnen Bauelementen in Modulbauweise aufgebautes Zelt, dadurch gekennzeichnet, daß dieses wenigstens ein Bauelement (2, 8, 9, 10, 11) mit teilzylindrischer Form und halbkreisförmigem oder annähernd halbkreisförmigem Querschnitt umfaßt, an dem im stirnseitigen Bereich entlang der bogenförmigen Nahtlinien jeweils Reißverschlüsse (2c, 2d) vorgesehen sind und wenigstens ein Bauelement (1, 7) in Form einer Apsis, dessen stirnseitige bogenförmige Nahtlinie (1a) ebenfalls mit einem Reißverschluß (1b) versehen ist, der der Nahtlinie (2a, 2b) des teilzylindrischen Bauelements (2, 8, 9, 10, 11) entspricht und mit diesem verbindbar ist.

2. Aus einzelnen Bauelementen in Modulbauweise aufgebautes Zelt nach Anspruch 1, dadurch gekennzeichnet, daß das Bauelement (1) in Apsisform stirnseitig eine halbkreisförmige oder annähernd halbkreisförmige Nahtlinie, einen trapezförmigen Grundriß und die Zeltplane im geschlossenen Zustand eine entsprechende Polyedermantelform aufweist oder daß das Bauelement (7) in Apsisform stirnseitig eine halbkreisförmige oder annähernd halbkreisförmige Nahtlinie, einen bogenförmigen Grundriß und die Zeltplane im geschlossenen Zustand eine Teilkugelschalenform aufweist.

3. Aus einzelnen Bauelementen in Modulbauweise aufgebautes Zelt, dadurch gekennzeichnet, daß dieses wenigstens ein Bauelement (3) in Igluform aufweist mit annähernd der Grundform einer quadratischen Pyramide mit gekrümmten Seitenflächen, wobei wenigstens zwei der gekrümmten Seitenflächen entlang jeweils bogenförmiger Nahtlinien (3a, 3b) Reißverschlüsse (3c, 3d) aufweisen, die in der Umrißform den Nahtlinien (2a, 2b) der Baulemente (2) in Tunnelform und auch den Nahtlinien (1a) der Bauelemente (1) in Apsisform entsprechen, so daß die igluförmigen Bauelemente (3) mittels der Reißverschlüsse (3c,3d) mit

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den apsisförmigen Bauelementen (1) und/oder mit den teilzylinderförmigen Bauelementen (2) verbindbar sind.

4. Aus einzelnen Bauelementen in Modulbauweise aufgebautes Zelt nach einem der Ansprüche 1-3, dadurch gekennzeichnet, daß weitere Bauelemente (4) in Igluform vorgesehen sind, die als Eckmodule dienen, mit einer von der quadratischen Pyramide abgeleiteten Form mit vier gekrümmten Seitenflächen und etwa quadratischem Grundriss, wobei das Bauelement (4) an wenigstens zwei benachbarten Seiten entlang einer bogenförmigen Nahtlinie jeweils Reißverschlüsse (4b) aufweist, und diese Nahtlinie in der Umrißform derjenigen der Nahtlinien (2a, 2b) der teilzylindrischen Bauelemente (2) und/oder der Nahtlinien (1a) der apsisförmigen Bauelemente (1) entspricht, so daß das igluförmige Bauelement (4) über Eck etwa im rechten Winkel mittels der Reißverschlüsse mit apsisförmigen Bauelementen (1) und/oder halbzylinderförmigen Bauelementen (2) und/oder igluförmigen Bauelementen (3) verbindbar ist.

5. Aus einzelnen Bauelementen in Modulbauweise aufgebautes Zelt nach einem der Ansprüche 1-4, dadurch gekennzeichnet, daß teilzylindrische Bauelemente (8, 10) mit Innenzelt und Boden vorgesehen sind, die als Schlafkabine dienen und teilzylindrische Bauelemente (2, 9, 11), die tunnelförmig sind ohne Boden.

6. Aus einzelnen Bauelementen in Modulbauweise aufgebautes Zelt nach einem der Ansprüche 1-5, dadurch gekennzeichnet, daß die Länge der teilzylindrischen Bauelemente (2, 8, 9, 10, 11) in Achsrichtung einem bestimmten Rastermaß entspricht oder ein Mehrfaches dieses Rastermaßes beträgt.

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Fig.1

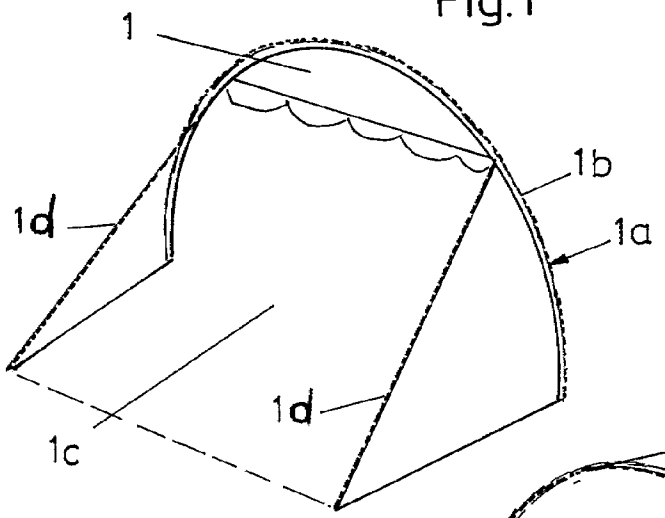


Fig. 2

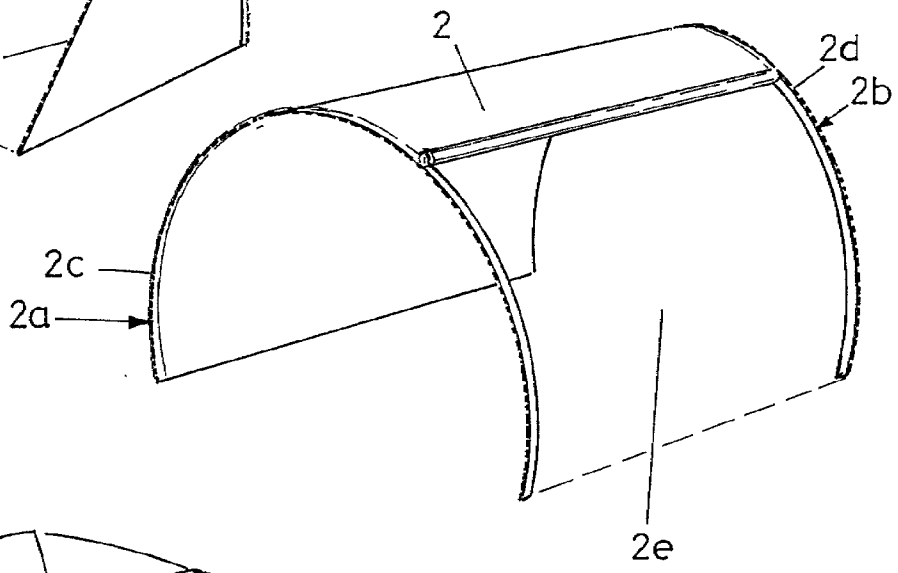


Fig. 3

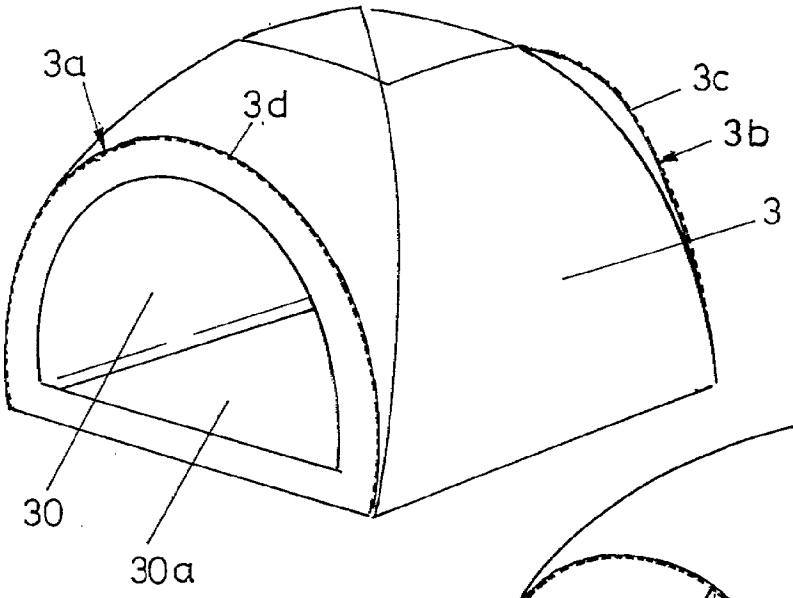
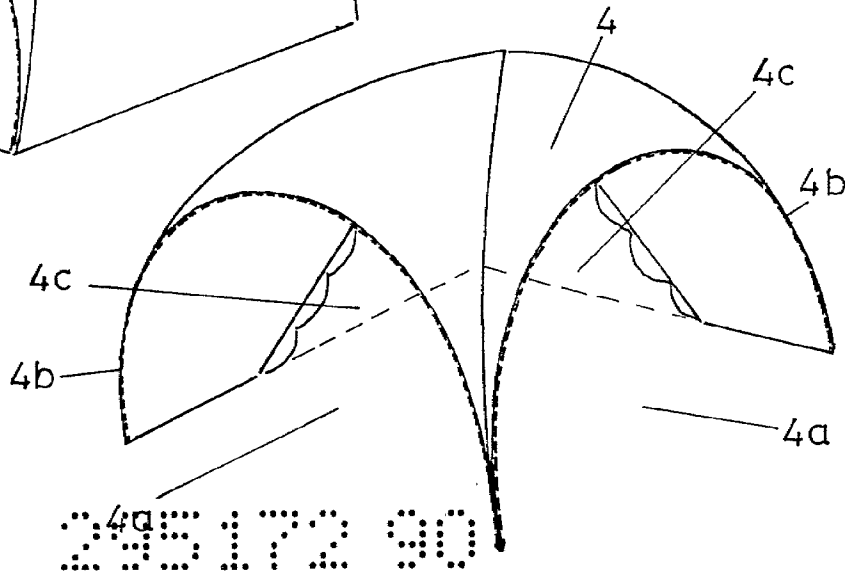


Fig. 4



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Fig. 5

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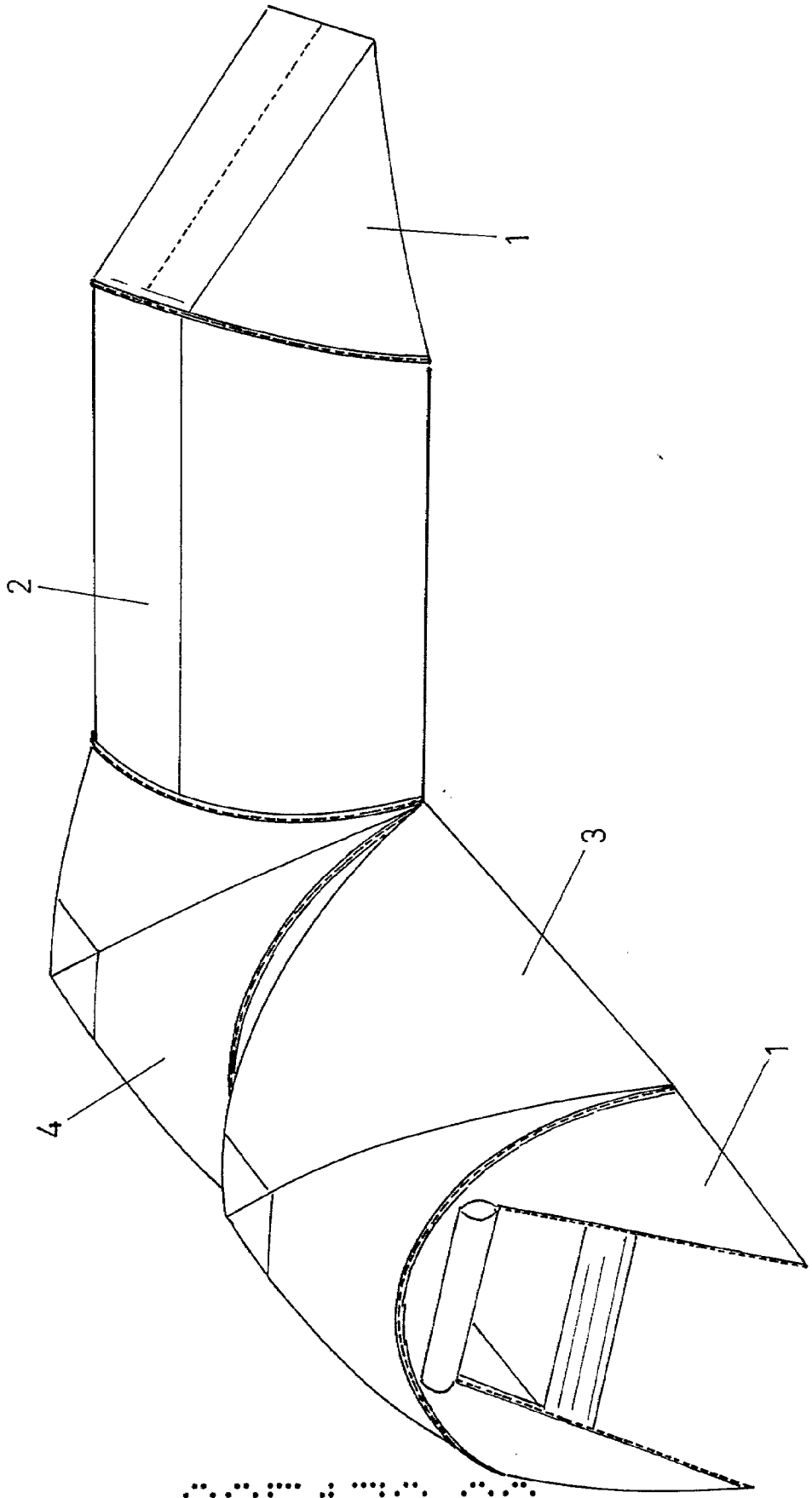


Fig.6

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Fig. 7

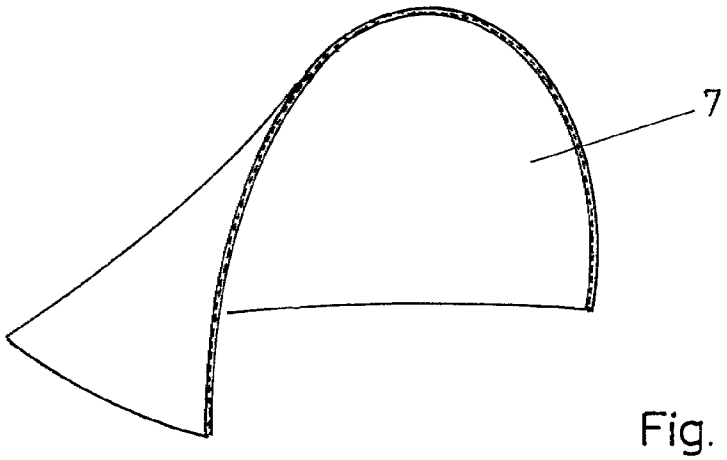


Fig. 8

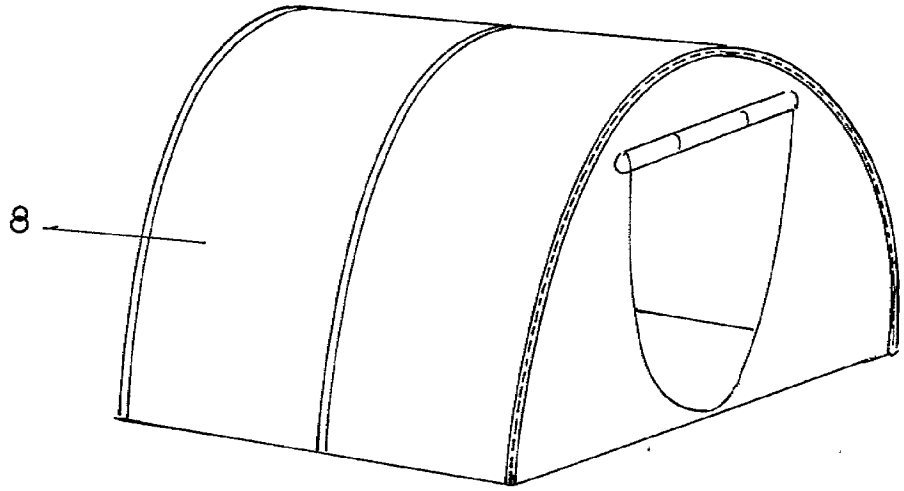
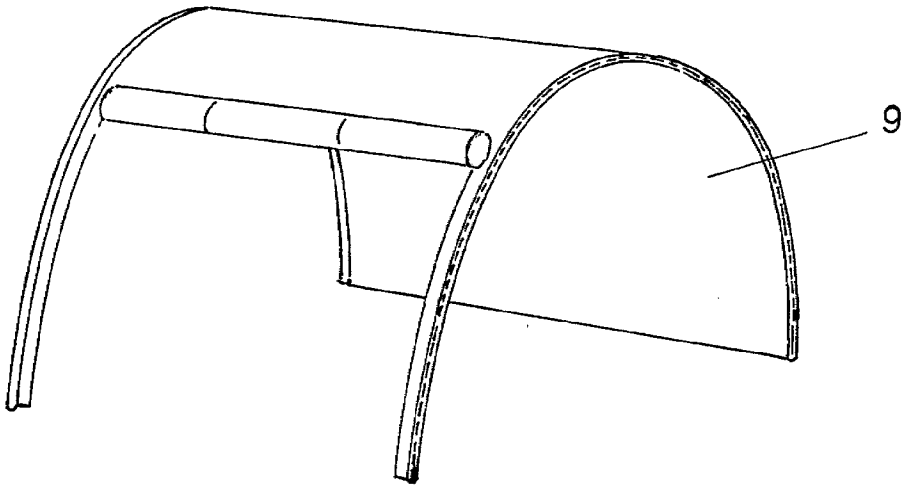


Fig. 9



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Fig.10

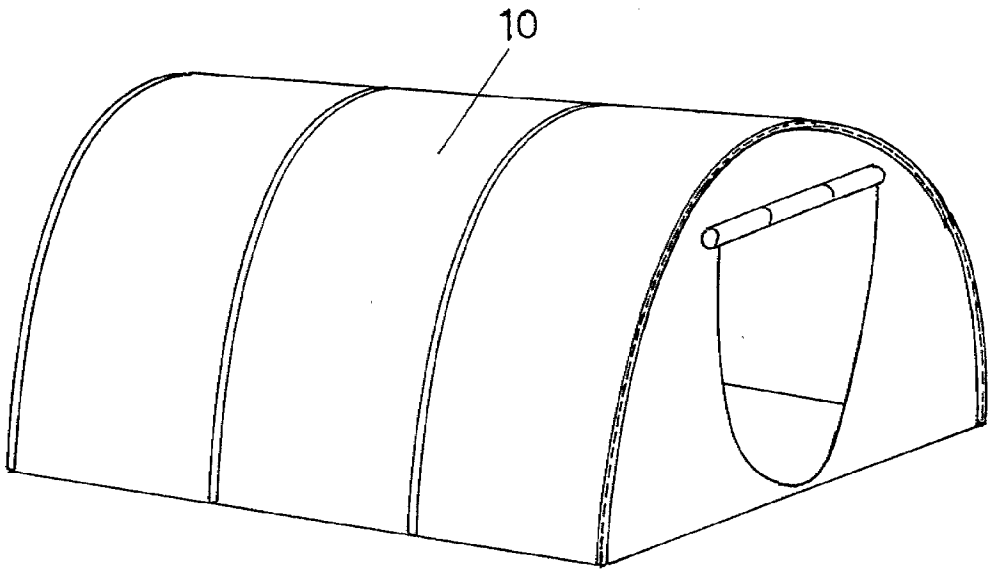
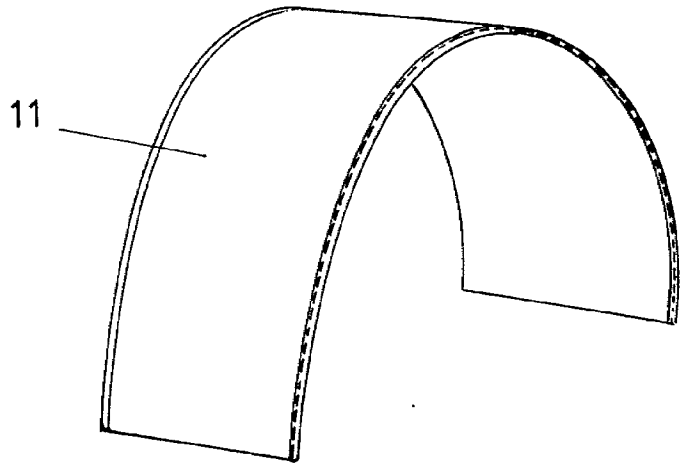


Fig.11



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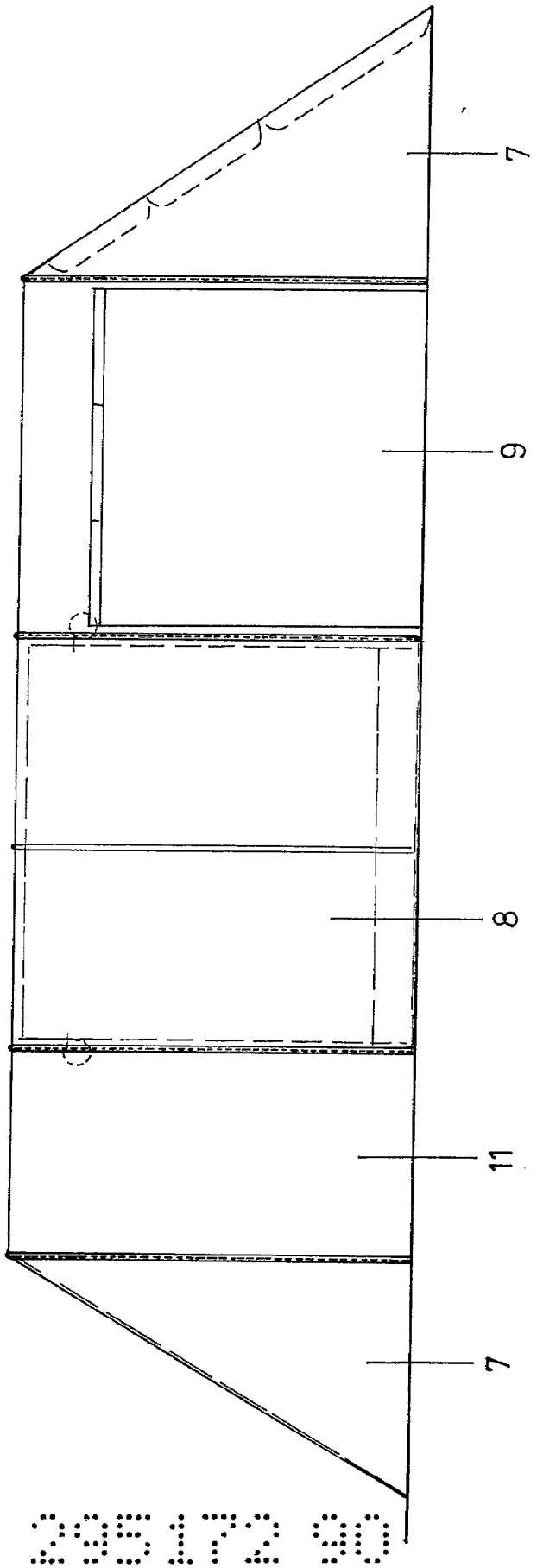


Fig.12

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TITLE: Zelt in Modulbauweise
PUBN-DATE: December 21, 1995
PATENT-FAMILY-ID: 8014856

APPLICANT:

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CPCI	E04H15/18	20130101

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(54) Vorzelt für Wohnwagen und Tunnelmodul zur Erweiterung solcher Vorzelte

DE 297 16 289 U 1

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71 287 p/p7/gw/bn

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Vorzelt für Wohnwagen und Tunnelmodul zur Erweiterung solcher Vorzelte

Technisches Gebiet

Die vorliegende Erfindung betrifft Vorzelte für Wohnwagen, Campingwagen oder ähnliches, die eine eigene Stützkonstruktion, zumindest einen heraustrennbaren Vorderwandteil und/oder zumindest einen heraustrennbaren Seitenwandteil aufweisen. Die Erfindung betrifft ferner ein Tunnelmodul, das zur Erweiterung gattungsgemäßer Vorzelte dient.

Stand der Technik

Es sind viele unterschiedliche gattungsgemäße Vorzelte bekannt. Im allgemeinen weisen diese Vorzelte eine im wesentlichen kubische Grundgestalt auf, wobei eine Wand des Kubusses weggelassen ist, damit das Vorzelt mit diese Seite an einen Wohnwagen oder ähnliches angebaut werden kann. Typischerweise beinhalten derartige Vorzelte eine eigene Stützkonstruktion, in der Regel durch zusammensteckbare Rohrstücke und Winkelelemente gebildet.

Es ist ebenfalls bekannt, derartige Vorzelte mit Seiten- bzw. Vorderwänden auszurüsten, die ganz oder zum Teil aus dem

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Vorzelt heraustrennbar sind. Das Heraustrennen der Wände bzw. Wandteile dient einerseits dazu, dem Bedarf der Zeltbenutzer an Frischluft Rechnung zu tragen, andererseits dazu, den Benutzern ein Zelt zur Verfügung zu stellen, was eine variable Größe aufweist. Zur Erweiterung des Vorzeltvolumens wurden bisher erkerähnliche Erweiterungselemente angeboten, die an der Naht, die sich nach Heraustrennen der Wände bzw. Wandteile ergibt, befestigt werden können. Nach Heraustrennen der Wand bzw. der Wandteile müssen diese dann im Vorzelt, Wohnwagen oder ähnlichem verstaut werden, was unter Umständen einen erheblichen Platzbedarf erfordert.

Aus dem entfernt liegenden technischen Gebiet der Steilwandzelte, an deren Konstruktion allerdings andere Anforderungen gestellt werden, als an die von Vorzelten, sind erweiterungsfähige Zelte bekannt. So ist beispielsweise in der DE 295 17 290 U1 ein Zelt in Modulbauweise offenbart, wobei die Module aus einzelnen Bauelementen gebildet sind. Das bekannte Steilwandzelt ermöglicht es dem Benutzer, das Zelt je nach Bedarf in unterschiedlichen Varianten zu erweitern oder zu vergrößern oder auch mehrere Zelte zu einer Baueinheit zu kombinieren. So ist dieses Zelt mit Bauelementen in Form einer Apsis und Bauelementen mit teilzylindrischer Form und halbkreisförmigem oder annähernd halbkreisförmigem Querschnitt ausgerüstet. Die stirnseitige bogenförmige Nahtlinie des apsisförmigen Bauelements ist ebenso wie der stirnseitige Bereich des teilzylindrischen Bauelements mit einem Reißverschluß versehen, wodurch diese beiden Bauteile miteinander verbindbar sind.

Unter Berücksichtigung des Standes der Technik ist es Aufgabe der vorliegenden Erfindung, ein Vorzelt für Wohnwagen, Campingwagen oder ähnliches bereitzustellen, das mit einfachen Mitteln schnell erweiterbar ist und ein Tunnelmodul für derartige Vorzelte bereitzustellen, mit dem Vorzelte einfach und schnell erweiterbar sind.

Darstellung der Erfindung

Erfindungsgemäß wird daher ein Vorzelt für Wohnwagen oder ähnliches bereitgestellt, mit einer eigenen Stützkonstruktion, zumindest einem heraustrennbaren Vorderwandteil und/oder zumindest einem heraustrennbaren Seitenwandteil, das dadurch gekennzeichnet ist, daß die Schnittstellen zu heraustrennbaren Voderwandteilen und Vorzelts einerseits und heraustrennbaren Seitenwandteilen und Vorzelts andererseits identisch ausgebildet und angeordnet sind, an den Schnittstellen zur Erweiterung des Vorzelts ein im wesentlichen kubisches Tunnelmodul anbaubar ist und sowohl die heraustrennbaren Vorderwandteile, als auch die heraustrennbaren Seitenwandteile als Abschluß des erweiterten Vorzelts verwendbar sind.

Gleichermaßen wird erfindungsgemäß ein Tunnelmodul zur Erweiterung von Vorzelten von Wohnwagen oder ähnlichem bereitgestellt, von im wesentlichen kubischer Form und mit einer eigenen Stützkonstruktion, Aufnahmeelementen für diese Stützkonstruktion, ersten Befestigungselementen in einem ersten Randbereich des Tunnelmoduls, zweiten Befestigungselementen in einem zweiten Randbereich des Tunnelmoduls, wobei erste und zweite Befestigungselemente als miteinander in Eingriff bringbare Gegenstücke ausgebildet und angeordnet sind.

Die identische Anordnung und Ausbildung der Schnittstellen des erfindungsgemäßen Vorzelts gewährleistet, daß dessen Raumaufteilung veränderbar ist. Beispielsweise läßt sich der Eingangsbereich von der Vorderwand zu einer Seitenwand verlegen. Ferner ermöglicht es die Tatsache, daß erfindungsgemäß an den Schnittstellen des Zelts zur Erweiterung ein im wesentlichen kubisches Modul anbaubar ist, daß der Benutzer des Vorzelts bei eventueller Erweiterung desselben diese Erweiterung an einer beliebigen Seite vorsehen kann. Das erfindungsgemäße Tunnelmodul ermöglicht es

erstmals durch Ausbildung und Anordnung von ersten und zweiten Befestigungselementen als miteinander in Eingriff bringbare Gegenstücke, daß das Tunnelmodul mit den ersten Befestigungselementen in einem ersten Randbereich an einem Vorzelt befestigbar ist und daß der zum Zweck der Erweiterung herausgetrennte Wandteil des Vorzelts an zweiten Befestigungselementen im zweiten Randbereich des Tunnelmoduls dort als Abschluß der Erweiterung anbringbar ist. Erweiterte Vorzelte sind folglich wetterdicht, die Erweiterung läßt sich platzsparend durchführen und ist kostengünstig. Die kubische Formgebung des Tunnelmoduls stellt sicher, daß Vorzelt und Tunnelmodul ein einheitliches Erscheinungsbild aufweisen und der ästhetische Gesamteindruck nicht getrübt wird. Durch das Bereitstellen einer eigenen Stützkonstruktion ist das Tunnelmodul mit einer ausreichenden Stabilität versehen, so daß die Erweiterung eines Vorzelts nicht dazu führt, daß das Vorzelt bezüglich seiner Festigkeit übermäßig beansprucht wird. Sowohl Vorzelt als auch Tunnelmodul weisen folglich eine ausreichend hohe Eigenfestigkeit auf. Bei entsprechender Gestaltung des Tunnelmoduls ist erfindungsgemäß der Vorteil gegeben, auch konventionelle Vorzelte mit dem neuartigen Tunnelmodul erweitern zu können.

Um sicherzustellen, daß einerseits das erfindungsgemäße Vorzelt nach Erweiterung im gesamten Bereich gleichwertig nutzbaren Raum bietet und andererseits das erfindungsgemäße Tunnelmodul eine Erweiterung bietet, die gleichermaßen nutzbar ist, wie das zu erweiternde Vorzelt, ist einerseits vorgesehen, daß die heraustrennbaren Vorderwandteile und die heraustrennbaren Seitenwandteile des Vorzelts eine Höhe aufweisen, die im wesentlichen der Eingangshöhe des Vorzelts entspricht und andererseits, daß das Tunnelmodul eine Höhe aufweist, die im wesentlichen der eines üblichen Vorzelts entspricht.

Um die Festigkeit eines erweiterten erfindungsgemäßen Vorzelts sicherzustellen, ist an die Stützkonstruktion des

Vorzelts eine eigene Stützkonstruktion des Tunnelmoduls anbringbar.

Diese eigene Stützkonstruktion des Tunnelmoduls weist vorteilhafterweise einen Giebel mit einem Winkel von ca. 165° auf. Der Giebelwinkel ist vorgesehen, um den Ablauf von Regenwasser sicherzustellen, wobei sich ein Winkel von 165° als idealer Kompromiß zwischen geringem Windfang und guten Ablaufbedingungen herausgestellt hat. Um diesen Kompromiß weiterhin zu verbessern, ist erfindungsgemäß ebenfalls vorgesehen, daß der Scheitel des Giebelwinkels außermittig zum Tunnelelement angeordnet ist, vorzugsweise in Richtung des Vorzelts. Gemäß einer vorteilhaften Weiterbildung ist das erfindungsgemäße Tunnelmodul mit ersten Befestigungselementen versehen, die durch eine erste Reißverschlußhälfte, ein Kederband oder ein Klettband gebildet sind und mit zweiten Befestigungselementen versehen, die entsprechend durch eine zweite Reißverschlußhälfte, eine Kederschiene oder ein Klettflausch gebildet sind. Durch eine derartige Ausgestaltung der Befestigungselemente wird die Forderung nach einer einfachen und schnellen aber gleichzeitig sicheren und wetterfesten Befestigung unter geringen Kosten noch besser erfüllt.

Damit die Festigkeit des Tunnelmoduls weiter verbessert ist, sind verschiedenartige Aufnahmeelemente zur Aufnahme von Verspannungs- bzw. Abspanneinrichtungen und einer Stützkonstruktion vorgesehen, die Ösen, verstärkte Ösen, Hohlsäume, verschließbare Hohlsäume und/oder Ankerhaken umfassen.

Um das erfindungsgemäße Tunnelmodul bezüglich der Wetterfestigkeit vorteilhaft weiterzubilden ist einerseits vorgesehen, es einstückig auszubilden, andererseits vorgesehen, das Dach und die Seitenteile bzw. die Seitenteile und den Boden durch Kappnähte derart miteinander zu verbinden, daß die Nahtgestaltung in Abflußrichtung des

Regenwassers keine Sicken oder Vertiefungen aufweist, die ein Eindringen des Wassers ins Zeltinnere begünstigen würden.

Kurze Beschreibung der Zeichnungen

Weitere Merkmale und Vorteile der vorliegenden Erfindung ergeben sich aus der detaillierten Beschreibung von Ausführungsbeispielen, die zur weiteren Erläuterung und zum besseren Verständnis der Erfindung unter Bezugnahme auf die beigefügten Zeichnungen folgt, in denen:

Fig. 1 eine perspektivische Ansicht eines erfindungsgemäßen Vorzelts und erfindungsgemäßer Tunnelmodule,

Fig.2-7 die einzelnen Elemente, aus denen das dargestellte Ausführungsbeispiel eines erfindungsgemäßen Tunnelmoduls aufgebaut ist,

Fig. 8 schematisch ein Tunnelmodul im teilmontierten Zustand und

Fig. 9 die Stützkonstruktion des ausgeführten Tunnelmoduls zeigt.

Beschreibung von Ausführungsbeispielen

Im folgenden wird ein Ausführungsbeispiel eines erfindungsgemäßen Vorzelts und ein Ausführungsbeispiel eines erfindungsgemäßen Tunnelmoduls unter Bezugnahme auf die Zeichnungen näher erläutert.

Aus Fig. 1 geht, schematisch dargestellt, der Aufbau eines teilweise durch Tunnelmodule 20 erweiterten Vorzelts 10 hervor. Es ist ersichtlich, daß das Vorzelt eine Vorderwand mit zwei Vorderwandteilen 11, 12 umfaßt. Eines dieser Vorderwandteile 11 befindet sich im Vorzelt, ein zweites

Vorderwandteil 12 ist zur Erweiterung des Vorzelts aus der Vorderwand herausgetrennt und als Abschluß des Tunnelmoduls 20 in dieses eingesetzt. Gleichermaßen ist eine Seitenwand 13 des Vorzelts 10 aus diesem herausgetrennt und als Abschluß an ein Tunnelmodul angebracht, das das Vorzelt seitlich erweitert. Sämtliche Befestigungen zwischen Wand- bzw. Wandteilen 11, 12, 13 und Vorzelt 10 bzw. zwischen Wand- bzw. Wandteilen 11, 12, 13 und Tunnelmodulen 20 sowie die Befestigungen zwischen Tunnelmodulen 20 und Vorzelt 10 sind in den dargestellten Ausführungsbeispielen durch Reißverschlüsse 18 gebildet. Die Tunnelmodule 20 sind von einer Stützkonstruktion getragen, von der von außen lediglich Dorne 16 sichtbar sind, die außen nach oben über die Tunnelmodule 20 vorstehen und relativ zu diesen durch Dichtelemente (nicht dargestellt), wie z.B. Gummilippen oder Aufsatzstücke, abgedichtet sind. Bodenseitig sind Vorzelt 10 und Tunnelmodule 20 durch Faulstreifen 17 abgeschlossen. Die Faulstreifen gewährleisten einen idealen Wasserablauf und gewährleisten durch ihre Befestigung mittels Ankern oder ähnlichem im Boden, daß auch ein winddichter Abschluß gegeben ist.

Die Fig. 2 bis 7 zeigen Einzelteile, aus denen ein Tunnelmodul vorzugsweise aufgebaut ist und verdeutlichen qualitativ die Größenverhältnisse zwischen ihnen.

So zeigt Fig. 2 ein Dachteil 22 und Fig. 3 eine Dachblende 23. Fig. 4 gibt ein geschlossenes Seitenteil 24 des Tunnelmoduls wieder, Fig. 5 ein Seitenteil 26, das mit einem Fenster 14 versehen ist. Fig. 6 illustriert einen Faulstreifen 17 und Fig. 7 einen Hohlsaum 28. Alle in den Fig. 2 bis 7 dargestellten Bauteile sind im Grundriß vor dem Vernähen dargestellt, mit Ausnahme des Seitenteils 26, in das bereits das Fenster 14 eingenäht ist.

Aus Fig. 7 ergibt sich der Aufbau eines Hohlsaums im einzelnen, der prinzipiell aus einem rechteckigen Textilstück

gefertigt wird. Auf dieses Textilstück werden in einem Randbereich ein Klettband 32, im anderen Randbereich von der Rückseite ein Klettflausch 34 befestigt, typischerweise durch Nähen oder Kleben. Diese beiden Klettbefestigungselemente werden miteinander verbinden, nachdem sie um die Stützkonstruktion geschlungen wurden. Im Mittelbereich des Hohlsaums befindet sich eine Markierung 30 für die Naht, an der Hohlsaum 28 und Tunnelelement 20 miteinander vernäht werden. Durch eine derartige Befestigung des Tunnelelements an der Stützkonstruktion ist somit eine eindeutige Lagefixierung und ein sicherer Halt gewährleistet.

Fig. 8 zeigt ein Tunnelmodul 20 kurz vor der Fertigstellung. Das Tunnelmodul 20 ist im Grundriß dargestellt, d.h. in „aufgeklappter" Position. In der Figur sind von oben nach unten folgende Elemente erkennbar: Faulstreifen 17, Seitenteil 26 mit Fenster 14, Dachteil 22 mit Dachblende 23, geschlossenes Seitenteil 24 und ein weiterer Faulstreifen 17. Die Orientierung des Tunnelmoduls 20 in der Figur ist dergestalt, daß die rechts dargestellte Seite zur späteren Befestigung an dem Vorzelt dient, die linke Seite die später vom Vorzelt abgewandte Seite darstellt.

Die aufgezählten Bauteile sind dabei vorzugsweise derart miteinander verbunden, daß sich die Überlappung in der Zeichnungsebene von der Mitte nach oben bzw. unten aus der Zeichnungsebene hinaus aufeinanderliegend ergibt; d.h. das in der Mitte dargestellte Dachteil 22 liegt zuunterst, die Seitenteile 26, 24 darauf und die Faulstreifen 17 auf den jeweiligen Seitenteilen. Bei in endgültig kubische Form geklapptem Tunnelmodul 20 stellt dies sicher, daß keine Sicken, Falze oder ähnliches gebildet werden, durch die ein Wassereintritt im Stoß- beziehungsweise Nahtbereich begünstigt würde. In der Fig. 8 sind ebenfalls die Kappnähte 36 als unterstützende Maßnahme zur Vermeidung von Wassereintritt im Nahtbereich schematisch dargestellt, mit denen Dachteil 22 und Seitenteile 24, 26 verbunden sind.

Dachteil 22 und Seitenteile 24, 26 sind entsprechend der Abbildung derart miteinander vernäht, daß das Dachteil 22 in Ablaufrichtung des Wassers die Seitenteile umgreift.

Wie bereits erwähnt, erfolgt die Befestigung des Tunnelmoduls 20 an Vorzelten mit geeigneten Befestigungsmitteln, in dem dargestellten Ausführungsbeispiel durch Reißverschlüsse 18. In der Fig. 8 ist das Tunnelmodul vor Befestigung der Reißverschlüsse 18 an ihm abgebildet. Rechtsseitig des Dachs 22 und der Seitenteile 24, 26 sind die Reißverschlüsse geschlossen dargestellt. Zur Befestigung werden die Reißverschlüsse getrennt, ein erstes Teil wird an der später dem Zelt benachbarten Seite befestigt, vorzugsweise durch Annähen, das Gegenstück 18' auf der anderen Seite. Das Gegenstück 18' ist symbolisch in der Fig. 8 linksseitig des Dachs 22 bzw. der Seitenteile 24, 26 abgebildet. Bei der Befestigung der Reißverschlußhälften 18, 18' ist darauf zu achten, daß der Reißverschluß, der im Dachbereich befestigt werden soll, in seinen Längenabmessungen die entsprechende Abmessung des Dachteils geringfügig unterschreitet und die Reißverschlüsse, die an den Seitenteilen befestigt werden sollen, in ihren Längenabmessungen die der Seitenteile geringfügig überschreiten. Bei Abstimmung der Längen und der endseitigen Befestigungspunkte der jeweiligen Reißverschlüsse ist darauf zu achten, daß dem Reiter des Reißverschlusses ausreichend Raum zur Verfügung gestellt wird, so daß er nicht mit dem angrenzenden Reißverschluß oder dessen Reiter kollidiert.

Zur Aufnahme der Stützkonstruktion sind an dem Tunnelmodul 20 verschiedene Klettverschlüsse 38, Hohlsäume 28 und Dornöffnungen 19 vorgesehen. Vorzeltseitig sind die Befestigungselemente unmittelbar im Randbereich des Tunnelmoduls angeordnet, an der dem Vorzelt entfernt liegenden Seite geringfügig vom Rand beabstandet. Zusätzlich zu diesen Vorkehrungen befinden sich in den Faulstreifen 17 Ankerhaken zur Aufnahme von Abspannelementen. Im Dachbereich

werden Tunnelmodul 20 und Stützkonstruktion durch die Hohlsäume in bereits erwähnter Art befestigt, zusätzlich reichen Dorne 16 der Stützkonstruktion durch das Tunnelmodul, genauer durch die Dornöffnungen 19 hindurch. die Dornöffnungen oder Ösen sind dabei vorzugsweise mit einer Verstärkung und einem Dichtelement ausgestattet. Im gleichen Randbereich ist im Dachteil 22 des Tunnelmoduls eine Dachblende 23 übergesteppt.

Fig. 9 zeigt ein Beispiel einer Stützkonstruktion, die bei dem beschriebenen Tunnelmodul zur Anwendung kommt. In der Figur sind die vorzugsweise gleich zu gestaltenden Bauteile mit gleichen Bezugszeichen versehen. Die Stützkonstruktion ist eine steckbare Rohrkonstruktion, wobei zusätzlich Eckmodule und Giebelmodule G, von denen in der Figur nur eines dargestellt ist, vorgesehen sind. Die Stützkonstruktion wird mit den Rohrmodulen a im Boden abgestützt. Die Rohrmodule a sind in Zwischenteile g bzw. b eingesetzt, wobei durch Vorsehen von Knebelschrauben in letzteren Bauteilen eine Höheneinstellung der Stützkonstruktion gewährleistet ist. Eine Breiteneinstellung ist in vergleichbarer Art vorgesehen, indem sowohl vorzeltseitig als auch an der dem Vorzelt entfernt liegenden Seite zwischen den Rohrmodulen b und e eine entsprechende Verstellmöglichkeit vorgesehen ist. In der Zeichnung ebenfalls dargestellt sind die Dorne 16, die bereits zuvor erwähnt wurden, und über ihnen Aufsatzstücke, mit denen die durch die Dornöffnungen gebildeten Öffnungen abgedichtet werden. Das Giebelelement G weist vorteilhafterweise einen Giebelwinkel γ von ca. 165° auf. Je nach Abmessungen des Tunnelmoduls werden unterschiedlich viele Giebelelemente eingesetzt. Diese werden mit der Stützkonstruktion vorteilhafterweise durch Schellen verbunden, und in ihnen ist ebenfalls in bereits geschilderter Weise eine Längeneinstellung vorgesehen.

Weitere Ausführungsformen und Vorteile der Erfindung ergeben sich aus den folgenden Ansprüchen.

S c h u t z a n s p r ü c h e

1. Vorzelt (10) für Wohnwagen oder ähnliches, mit
   - einer eigenen Stützkonstruktion,
   - zumindest einem heraustrennbaren Vorderwandteil (11, 12) und/oder
   - zumindest einem heraustrennbaren Seitenwandteil (13),

   dadurch gekennzeichnet, daß
   - die Schnittstellen (18) zwischen heraustrennbaren Vorderwandteilen und Vorzelt einerseits und heraustrennbaren Seitenwandteilen und Vorzelt andererseits identisch ausgebildet und angeordnet sind,
   - an den Schnittstellen zur Erweiterung des Vorzelts ein im wesentlichen kubisches Tunnelmodul (20) anbaubar ist und
   - sowohl die heraustrennbaren Vorderwandteile (12) als auch die heraustrennbaren Seitenwandteile (13) als Abschluß des erweiterten Vorzelts verwendbar sind.

2. Vorzelt nach Anspruch 1, **dadurch gekennzeichnet, daß** die heraustrennbaren Vorderwandteile und die heraustrennbaren Seitenwandteile eine Höhe aufweisen, die im wesentlichen der Höhe des Vorzelts entspricht.

3. Vorzelt nach mindestens einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, daß** die Schnittstellen durch Reißverschlüsse (18), eine Kederband-Kederschienenverbindung oder eine Klettband-Klettflauschverbindung gebildet sind.

4. Vorzelt nach mindestens einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, daß** an die

Camel Manufacturing Company, LLC,
Case No. PGR2024-00033; Exhibit 1002

Stützkonstruktion des Vorzelts eine eigene Stützkonstruktion des Tunnelmoduls anbringbar ist.

5. Tunnelmodul (20) zur Erweiterung von Vorzelten von Wohnwagen oder ähnlichem,
   - von im wesentlichen kubischer Form und mit
   - einer eigenen Stützkonstruktion,
   - Aufnahmeelementen (19, 28) für diese Stützkonstruktion,
   - ersten Befestigungselementen (18) in einem ersten Randbereich des Tunnelmoduls,
   - zweiten Befestigungselementen (18') in einem zweiten Randbereich des Tunnelmoduls, wobei
   - erste und zweite Befestigungselemente als miteinander in Eingriff bringbare Gegenstücke ausgebildet und angeordnet sind.

6. Tunnelmodul nach Anspruch 5, **dadurch gekennzeichnet, daß** die Stützkonstruktion einen Giebelwinkel (γ) von ca. 165° aufweist.

7. Tunnelmodul nach Anspruch 6, **dadurch gekennzeichnet, daß** der Scheitel des Giebelwinkels außermittig zum Tunnelelement angeordnet ist.

8. Tunnelmodul nach mindestens einem der Ansprüche 5 bis 7, **dadurch gekennzeichnet, daß** die ersten Befestigungselemente durch
   - eine erste Reißverschlußhälfte,
   - ein Kederband oder
   - ein Klettband

   und die zweiten Befestigungselemente entsprechend durch
   - eine zweite Reißverschlußhälfte,
   - eine Kederschiene oder
   - ein Klettflausch gebildet sind.

9. Tunnelmodul nach mindestens einem der Ansprüche 5 bis 8, **dadurch gekennzeichnet, daß** die Aufnahmeelemente im ersten Randbereich diesem unmittelbar benachbart und die Aufnahmeelemente im zweiten Randbereich von diesem beabstandet angeordnet sind.

10. Tunnelmodul nach mindestens einem der Ansprüche 5 bis 9, **dadurch gekennzeichnet, daß** die Aufnahmeelemente
- Ösen,
- verstärkte Ösen,
- Hohlsäume,
- verschließbare Hohlsäume und/oder
- Ankerhaken

umfassen.

11. Tunnelmodul nach mindestens einem der Ansprüche 5 bis 10, **dadurch gekennzeichnet, daß** das Tunnelmodul aus einem Dach (22) und zwei Seitenteilen (24, 26) gebildet wird.

12. Tunnelmodul nach Anspruch 11, **dadurch gekennzeichnet, daß** das Tunnelmodul weiterhin einen Boden aufweist.

13. Tunnelmodul nach mindestens einem der Ansprüche 5 bis 11, **dadurch gekennzeichnet, daß** das Tunnelmodul einstückig ausgebildet ist.

14. Tunnelmodul nach Anspruch 12, **dadurch gekennzeichnet, daß** das Tunnelmodul einstückig oder mit nur einer Nahtstelle ausgebildet ist.

15. Tunnelmodul nach Anspruch 11 oder 12, **dadurch gekennzeichnet, daß** das Dach und die Seitenteile durch Kappnähte (36) derart miteinander verbunden sind, daß das Dach um die Kanten zwischen dem Dach und den Seitenteilen gelegt ist.

16. Tunnelmodul nach Anspruch 12, **dadurch gekennzeichnet, daß** der Boden und die Seitenteile durch Kappnähte derart miteinander verbunden sind, daß die Seitenteile um die Kanten zwischen Seitenteilen und Boden gelegt sind.

17. Tunnelmodul, nach mindestens einem der Ansprüche 5 bis 16, **dadurch gekennzeichnet, daß** das Tunnelmodul eine Höhe aufweist, die im wesentlichen der eines üblichen Vorzelts entspricht.

FIG. 1

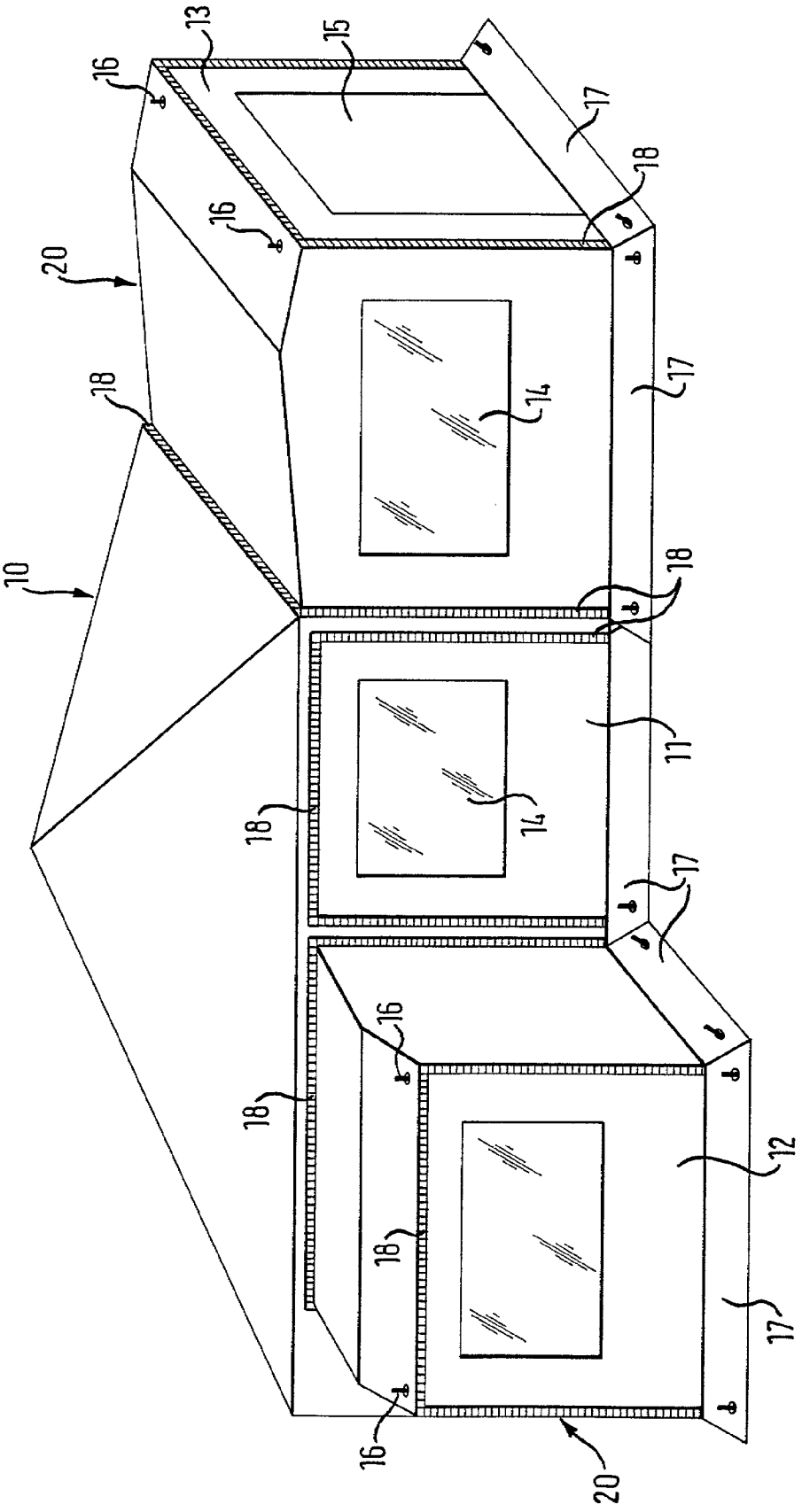


FIG. 2

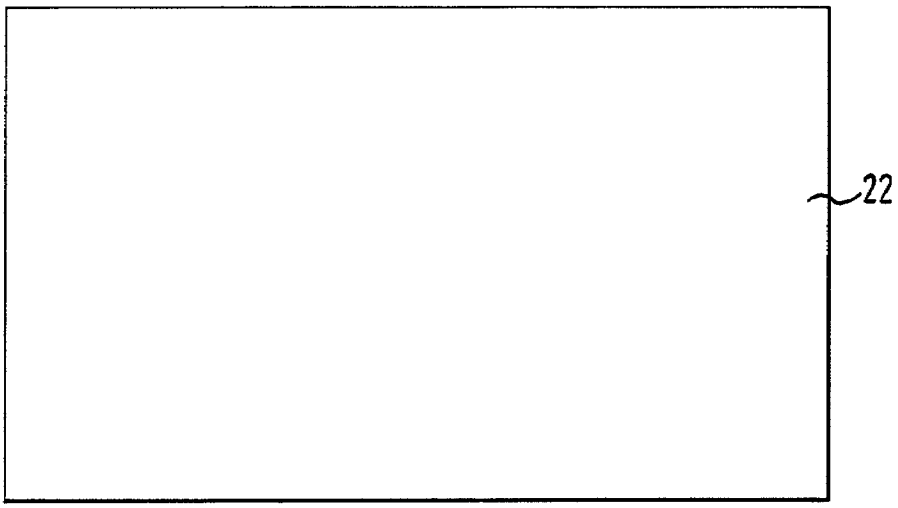


FIG. 3

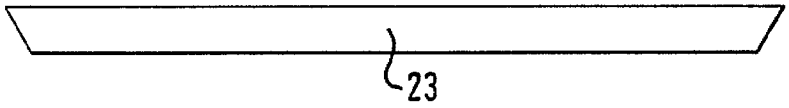


FIG. 4

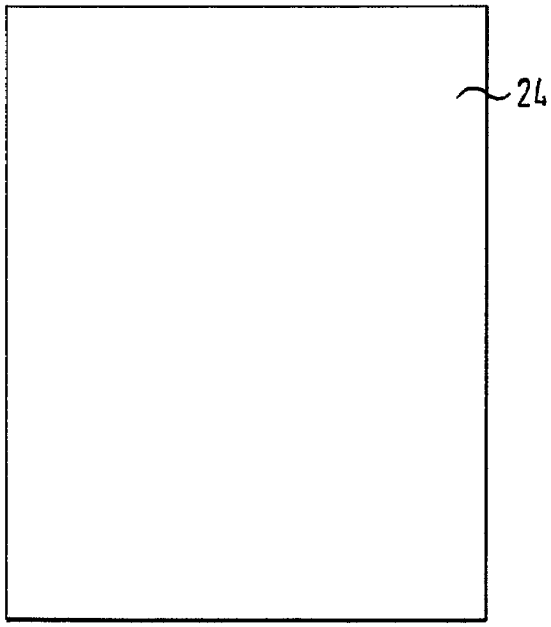


FIG. 5

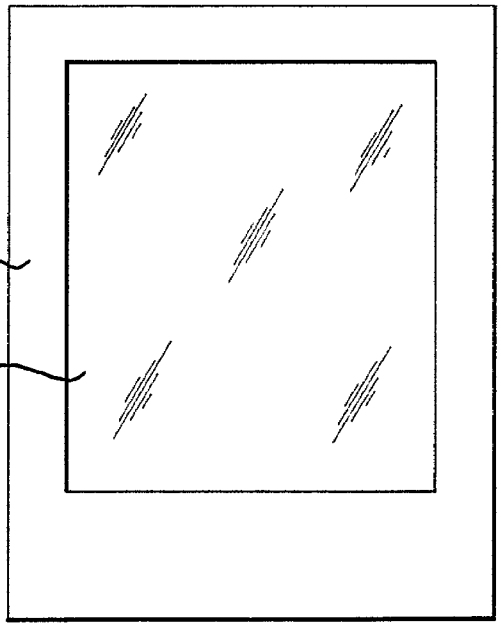


FIG. 6

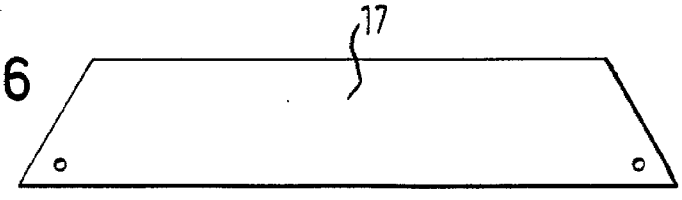


FIG. 8

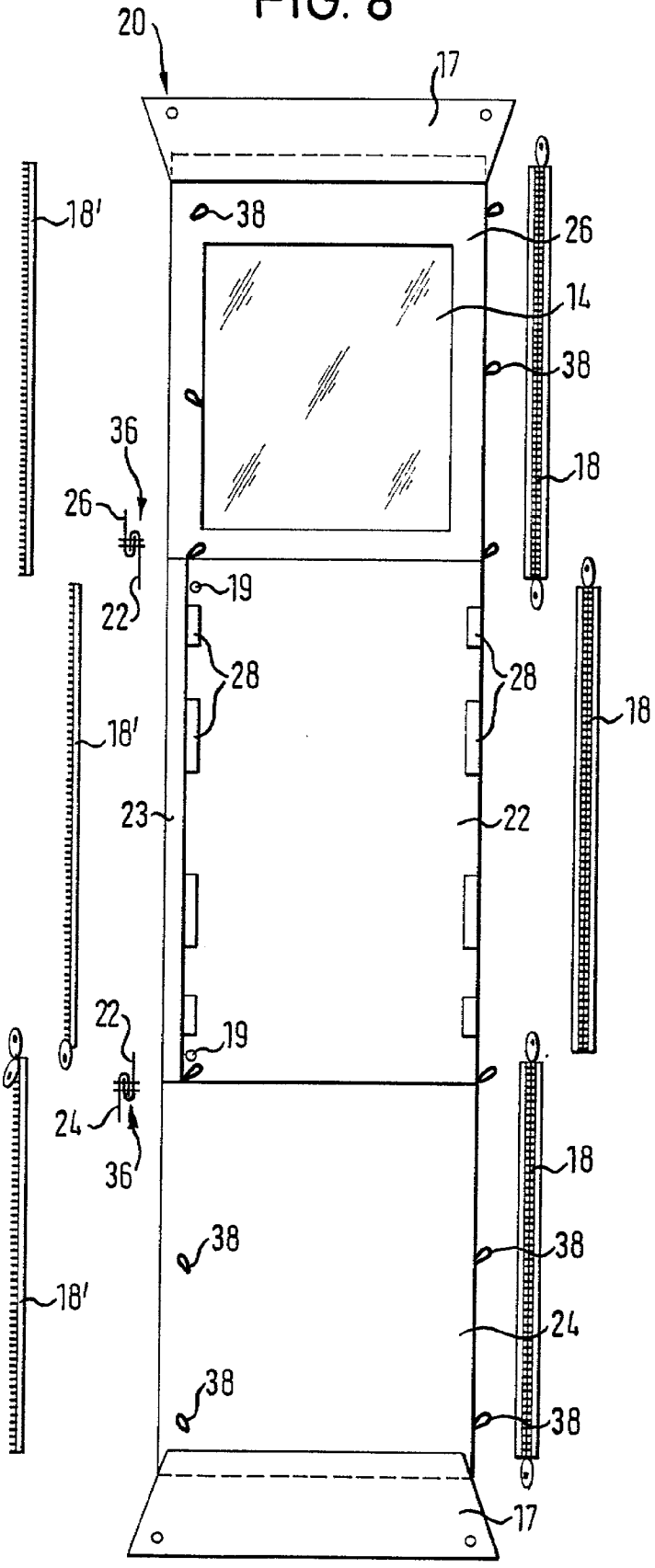

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FIG. 7

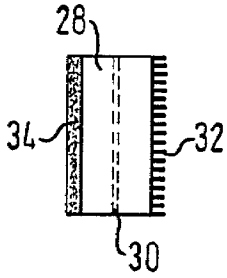
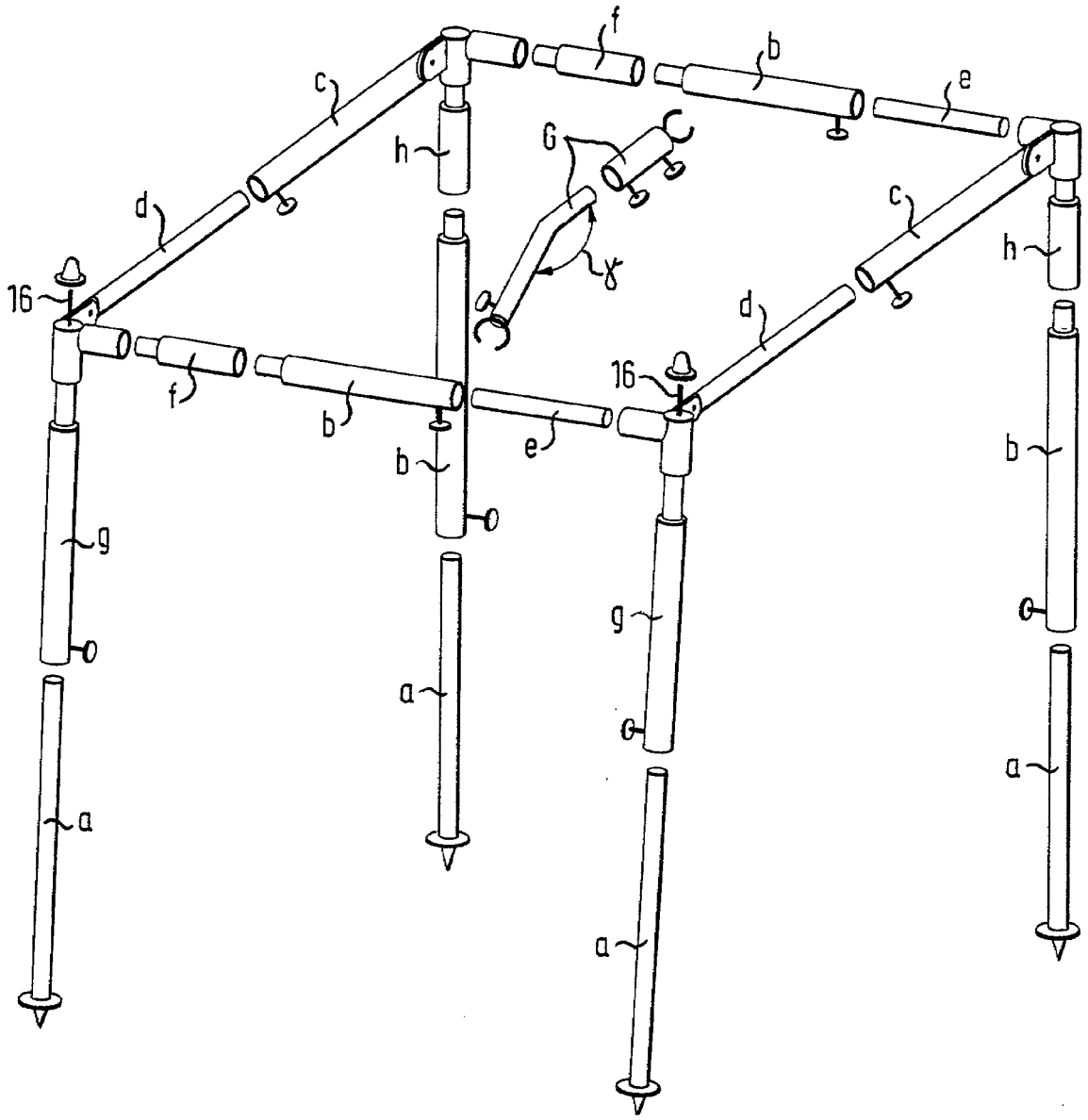

28
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32
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FIG. 9



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(60) **Références à d'autres documents nationaux apparentés :**

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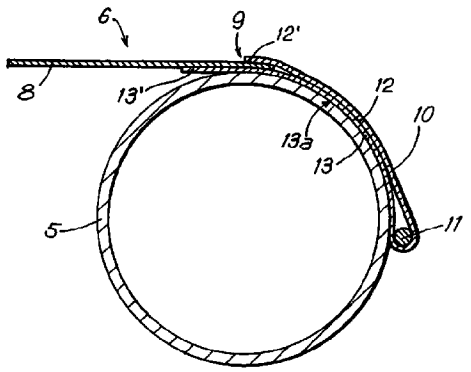
(54) Installation à structure tubulaire en arceaux couverte par au moins une bâche à câbles et bâche à câbles correspondante.

(57) L'installation est constituée d'une structure en arceaux, recouverte au moins en toiture d'au moins une bâche à câbles.

Selon l'invention, la structure en arceaux est tubulaire et la bâche comporte un tissu enduit dont les bords opposés sont solidaires de câbles de mise sous tension.

La bâche à câbles pour la couverture d'une installation de l'invention avec structure tubulaire en arceaux comporte des câbles qui sont fixés le long d'au moins deux de ses bords opposés pour être jantés par dessus les arceaux.

De manière caractéristique, elle est réalisée dans un premier tissu (8) enduit double face; chaque câble (11) est logé coulissant dans un second tissu replié, formant manchon (10) de recouvrement de l'arceau (5), qui est fixé le long d'un bord (9) dudit premier tissu (8); le second tissu a une structure apte à absorber la déformation occasionnée par le jantage entre les deux bords du manchon (10).



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INSTALLATION A STRUCTURE TUBULAIRE EN ARCEAUX COUVERTE PAR AU MOINS UNE BACHE A CABLES ET BACHE A CABLES CORRESPONDANTE

La présente invention concerne une installation qui est constituée d'une structure en arceaux recouverte , au moins en toiture , d'une bâche à câbles, c'est-à-dire d'une bâche dont les bords opposés sont munis de câbles destinés à réaliser la mise en tension de la bâche. Elle concerne plus particulièrement une installation dont la structure en arceaux est tubulaire, ainsi qu'une bâche à câbles spécialement conçue pour une telle installation.

On connaît par le document FR.2.673.657 un hangar qui comporte une ossature métallique qui est constituée d'arcs, reliés par des entretoises, recouverts d'une bâche à câbles. Les arcs en question sont formés dans des poutres en I cintrées , qui sont boulonnées au sol par l'intermédiaire de platines soudées à leurs extrémités. Comme cela apparaît clairement à l'examen de la figure 2 du document FR.2.673.657, la bâche est bordée le long de chacun de ses bords frontaux par un ourlet qui est destiné au passage du câble ; de plus les poutres en I sont cintrées dans le plan de leur âme , la cavité formée par l'âme et les deux demi ailes constituant, pour chacun des arcs d'extrémité , le logement d'un câble passé dans chacun des ourlets. La mise en tension du câble entraîne à la fois la tension de la bâche et son blocage dans le logement.

Selon le demandeur, l'installation précitée présente comme premier inconvénient que , lors de sa mise en tension le long de la poutre en I, il se produit un léger coulissement de la bâche selon l'arête de l'aile du I qui forme le bord extérieur du logement. Un tel coulissement, notamment s'il est amené à être répété, risque de couper ou de détériorer la bâche. Ceci serait d'autant plus vrai dans le cas d'une bâche comportant, comme élément de couverture , un tissu présentant une enduction en contact avec l'arête. Il se produirait une dégradation de l'enduction au niveau de l'arête génératrice de frottement.

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Le but que s'est fixé le demandeur est de proposer une installation qui pallie l'inconvénient précité.

Ce but est parfaitement atteint par l'installation selon l'invention qui est constituée d'une structure en arceaux, recouverte au moins en toiture au moins d'une bâche à câbles. De manière caractéristique la structure en arceaux est tubulaire et la bâche comporte un tissu enduit dont les bords opposés sont solidaires de câbles de mise sous tension.

Ainsi lors de la mise en tension des câbles, le contact entre la bâche et les arceaux s'effectue selon des arcs de cercle, sans arête ni discontinuité comme c'est le cas lorsque l'arceau est une poutre en I. Il n'y a donc pas de risque de dégradation du fait d'un frottement selon une arête.

De préférence la structure en arceaux comporte des pieds qui sont arrimés au sol et les arceaux sont constitués de tubes creux cintrés qui sont emboîtés dans les pieds. Selon ce mode particulier de réalisation, une fois que les pieds sont arrimés au sol, le montage de la structure en arceaux s'effectue par simple emboîtement des tubes creux sur les pieds. De plus la solidarisation de l'installation est obtenue uniquement grâce à la mise en tension des différents câbles. La tension mise en jeu est particulièrement importante.

S'agissant d'une bâche réalisée à partir d'un tissu enduit double face, compte-tenu des tensions exercées, il peut se produire un certain allongement de la bâche. Pour pallier cet inconvénient, de préférence le tissu enduit double face comporte des éléments longitudinaux de renfort consistant en des bandes qui sont rapportées sur le tissu enduit et qui sont eux-mêmes réalisés dans un tissu technique à forte résistance et à faible allongement.

L'autre inconvénient de l'installation décrite dans le document FR.2.673.657 réside dans le fait que la bâche est tendue entre les deux arcs d'extrémité. Ceci est une limitation importante compte-tenu du poids de la bâche. Les dimensions de l'installation devront tenir compte de cette contrainte ou bien se posent des difficultés pour le placement de la bâche

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au-dessus de la structure métallique.

C'est un autre objet de l'invention que de proposer une installation qui pallie l'inconvénient précité. Cette installation est constituée d'une structure tubulaire en arceaux recouverte d'une bâche à câbles qui de manière caractéristique est constituée d'au moins deux modules comprenant chacun le même nombre d'arceaux recouverts par une bâche modulaire, de longueur prédéterminée, tendue par dessus lesdits arceaux; d'autre part ladite installation comprend au moins une bâche à câbles de liaison, de faible longueur , tendue par dessus deux arceaux adjacents rapprochés de chacun des modules.

La solution précitée de l'invention permet de réaliser des installations de grande longueur à partir de bâches modulaires. La bâche inter-modules de liaison permet de réaliser un jantage simple entre les modules comme cela apparaîtra plus clairement à la lecture de la description qui sera faite ci-après. Pour un certain nombre d'utilisations, s'agissant d'une installation portable pour stockage ou pour réception, il peut être nécessaire que, en dehors de la couverture, l'installation soit fermée par des pignons.

C'est un autre objet de l'invention que de proposer une installation ayant des pignons frontaux, comportant des bâches à câbles , tendues sur les arceaux tubulaires d'extrémités.

Selon une variante préférée, au moins un pignon frontal comporte:

a) deux barres de traverse fixées entre les deux montants opposés d'un même arceau d'extrémité, la première traverse au niveau du sol et la seconde à une hauteur déterminée,

b) une première bâche à câbles en forme de segment circulaire dont le câble est fixé le long du bord en arc de cercle, des moyens de mise sous tension du câble de cette première bâche qui sont fixés à l'arceau au niveau de la seconde traverse et des moyens d'accrochage de ladite première bâche à ladite seconde traverse, et

c) au moins une seconde bâche à câbles ayant sensiblement la forme d'un

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trapèze rectangle dont le côté oblique est en arc de cercle et muni d'un câble apte à être tendu le long de l'arceau entre la première et la deuxième traverses, et des moyens d'accrochage de ladite deuxième bâche à la première et à la deuxième traverses selon les deux côtés parallèles du trapèze.

La partie du pignon frontal qui ne comprend pas les deux bâches précitées fait office d'ouverture de passage. Cette ouverture peut elle-même être fermée à l'aide d'une bâche à câbles du même type que la seconde bâche précitée et d'une porte formée dans une bâche et qui est montée coulissante entre la première et la seconde traverses.

Pour faciliter le montage et le démontage des bâches et compléter la mise en tension obtenue grâce aux câbles, il peut être avantageux de disposer d'un système spécialement adapté de fixation. Selon l'invention, dans ce cas, la bâche à câbles comporte, le long d'un bord non câblé, un ourlet ou manchon , apte à permettre l'introduction par coulissement d'une tige, et des encoches par lesquelles est accessible la tige introduite dans l'ourlet ou le manchon et l'installation comporte des éléments flexibles de fixation, chaque élément , par exemple lanière ou sangle, passant dans une encoche et enserrant à la fois ladite tige et une traverse fixée entre deux arceaux.

Ceci peut être mis en oeuvre pour les bâches de pignon pour leur accrochage sur la première ou la seconde traverse précitée, ainsi que pour les bâches de toiture pour l'accrochage de leurs bords longitudinaux aux traverses fixées longitudinalement entre les arceaux.

Le demandeur a constaté que lorsque la bâche est réalisée à l'aide d'un tissu enduit double face, il se forme , lors de la mise en tension, des plis dans la bâche à proximité du câble et que ces plis provoquent à la longue des cassures préjudiciables. C'est un autre objet de la présente invention que de proposer une bâche à câbles qui pallie l'inconvénient précité.

Ce but est parfaitement atteint grâce à la bâche à câble pour

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couverture de structure tubulaire en arceaux, selon l'installation de l'invention. De manière connue cette bâche comporte des câbles qui sont fixés le long d'au moins deux bords opposés de la bâche pour être jantés par dessus les arceaux correspondants. De manière caractéristique la bâche est réalisée dans un premier tissu enduit double face ; chaque câble est logé coulissant dans un second tissu replié , formant manchon de recouvrement de l'arceau, qui est fixé le long d'un bord dudit premier tissu; le second tissu a une structure apte à absorber la déformation occasionnée par le jantage entre les deux bords du manchon.

Dans la suite du présent texte on dénommera sous le terme jantage l'opération qui consiste à réaliser la mise en tension d'une bâche entre deux arceaux tubulaires, grâce à des dispositifs de tension qui sont fixés au sol et solidaires des extrémités libres du câble.

Cette mise en tension est réalisée alors que l'élément de couverture est disposé au-dessus des différents montants de la structure tubulaire et que chacun des bords munis d'un câble enveloppe partiellement la surface supérieure et latérale d'un montant extrême de ladite structure tubulaire. Cette enveloppement doit être suffisant pour éviter que le câble ne puisse passer au-dessus du montant tubulaire et donc déjanter, par exemple en cas de grand vent.

Ainsi , selon l'invention, les parties de la bâche, le long de chacun des bords opposés, qui sont déformées lors de la mise sous tension des câbles sont constituées par des manchons indépendants, à déformabilité améliorée , de manière à éviter le phénomène de cassure observé précédemment.

S'agissant d'une structure tubulaire en arceaux dont la hauteur maximale est de l'ordre de 3 à 4 mètres, la déformation occasionnée par le jantage entre les deux bords du manchon est comprise entre 5 et 10%. Cette déformation correspond à l'écart de longueur existant entre les deux bords du manchon du fait que chacun des bords se trouve à un niveau de hauteur différent par rapport à l'arceau correspondant.

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Comme second tissu constitutif du manchon de recouvrement, il est possible d'utiliser un tissu enduit simple face. Le fait que l'enduction ne soit que sur l'une des faces et non sur les deux faces comme c'est le cas pour le premier tissu donne plus de souplesse au manchon, le tissu étant moins bloqué par l'enduction.

De préférence, dans ce cas, la matière formant l'enduction du premier et du second tissus est la même et la face enduite du manchon est tournée vers l'intérieur de celui-ci, la fixation du manchon sur le premier tissu étant réalisée par soudage à l'aide de l'enduction.

Cette disposition particulière trouve son intérêt dans la simplicité de fabrication de la bâche à câbles.

Selon une version préférée de l'invention, la bâche à câbles est constituée avec un premier tissu en polyester enduit sur les deux faces de PVC, faisant de l'ordre de 500 à 650g/m^2 et constituée de fils de l'ordre de 1100 dtex; le second tissu , constitutif du manchon, est un tissu polyester enduit sur une face de PVC, faisant de l'ordre de 650 à 750g/m^2 avec d'une part des fils de l'ordre de 1100 dtex et d'autre part des fils de l'ordre de 2200 dtex.

S'agissant d'un manchon de recouvrement dont la surface intérieure comporte une enduction PVC, avantageusement le câble de mise sous tension est un câble qui ne comporte pas d'enduction PVC. En effet la demanderesse a constaté que si le câble était lui-même gainé de PVC il se produisait un accrochage entre le manchon et le câble empêchant un bon coulissement lors de l'introduction du câble dans le manchon et sa mise sous tension. Par exemple le câble pourra être un câble d'acier, monotoron, recouvert d'une gaine de polyéthylène. Le glissement d'un tel câble, gainé polyéthylène , à l'intérieur du manchon enduit PVC est supérieur à celui qu'aurait un câble gainé PVC.

Une autre difficulté est apparue lors de la mise en oeuvre d'une bâche à câbles constituée d'un tissu enduit double face, sans manchon indépendant de recouvrement. En effet lors du jantage, il se produit un

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accrochage entre la surface enduite de la bâche et les arceaux de jantage. Cet accrochage peut occasionner des plis.

Avantageusement , pour pallier cet inconvénient, le pli du manchon qui est tourné vers l'arceau à recouvrir est un tissu dont la face extérieure est non-enduite, ledit pli ayant une longueur telle que l'arceau n'est en contact qu'avec ladite face non-enduite.

La présente invention sera mieux comprise à la lecture de la description qui va être faite d'un mode préféré de réalisation d'une installation modulaire comportant une structure tubulaire en arceaux recouverte par des bâches à câbles à manchon de recouvrement, illustré par le dessin annexé dans lequel :

La figure 1 est une vue partielle en coupe d'une bâche à câbles jantée sur un arceau,

La figure 2 est une vue schématique en perspective d'une installation modulaire, et ,

La figure 3 est une vue en coupe d'une bâche de liaison, inter-modules, et une vue partielle des deux bâches modulaires correspondantes,

La figure 4 est une vue partielle de face d'un pignon, depuis l'intérieur de l'installation,

La figure 5 est une vue partielle d'un système d'accrochage d'une bâche.

L'installation 1 montrée à la figure 2 peut servir comme bâtiment d'élevage, de stockage, de réception. Elle est constituée d'une structure tubulaire recouverte de bâche à câbles. Plus particulièrement la structure tubulaire de cette installation 1 comporte deux modules identiques 2 et 3 reliés par une bâche de liaison 4.

Dans chaque module les montants tubulaires en arceaux 5 sont emboîtés à leurs deux extrémités dans des pieds qui sont arrimés dans le sol et sont recouverts d'une bâche à câbles 6 ayant une longueur prédéterminée L.

Dans un exemple concret de réalisation, mais non limitatif, chaque module 2,3 comportait quatre arceaux 5 régulièrement disposés et fixés au

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sol. Sur les quatre arceaux était tendue une bâche à câbles 6 ayant une longueur L de 5mètres. On désigne dans le présent texte comme étant la longueur L la distance séparant les deux arceaux extrêmes 5 d'un même module, dans le sens longitudinal de l'installation 1. La largeur au sol de l'installation 1 , prise entre les pieds de chaque arceau, était de 8,5Omètres.

Les deux modules 2,3 de l'installation 1 sont disposés dans le prolongement l'un de l'autre , de sorte que deux arceaux extrêmes, respectivement 5a pour le premier arceau du premier module 2 et 5b pour le premier arceau du second module 3 sont espacés d'une distance d , qui est de l'ordre de quelques dizaines de centimètres. Les deux modules 2,3 sont reliés entre eux par une bâche à câbles 7 de liaison inter-modules. Sur la figure 1 on a représenté partiellement une bâche à câbles 6 selon l'invention, jantée sur un arceau 5.

La bâche à câbles 6 est constituée d'un tissu enduit double face 8 qui est l'élément principal de couverture. Ce tissu enduit double face 8 est muni, le long de chacun des deux bords 9 selon lesquels va être réalisé le jantage, d'un manchon 1O destiné à servir de logement au câble 11.

Le manchon 1O est réalisé à partir d'un tissu qui est replié en deux plis 12,13 dont les extrémités libres 12' , 13' sont fixées au bord 9 du tissu enduit double face 8.

De préférence le tissu constitutif du manchon 1O est un tissu enduit sur une face , l'enduction étant réalisée dans la même matière que celle du tissu enduit double face 8. La fixation des extrémités libres 12' et 13' sur le bord 9 est réalisée par soudage. Ceci peut être fait soit par compression à chaud soit par compression combinée avec l'action de hautes fréquences. On comprend que la face enduite du tissu constitutif du manchon 1O est la face qui est tournée vers l'intérieur du manchon.

Dans un exemple précis de réalisation, mais non limitativement, le tissu enduit double face 8 était une toile de polyester, réalisée à partir de fils de 11OOdtex. Cette toile était enduite double face avec une enduction PVC (polychlorure de vinyle). Son poids au mètre carré était de 575 g, avec

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une résistance à la rupture comprise entre 25O et 27OdaN pour une éprouvette de 5cm de large. Le tissu enduit simple face, constitutif du manchon 1O était une toile polyester réalisée à partir de fils de 11OOdtex et de fils de 22OOdtex. Cette toile était enduite de PVC. Son poids au mètre carré était de 7OOg avec une résistance à la rupture de 4OO à 42OdaN pour une éprouvette de 5cm de large.

Comme on peut le remarquer sur la figure 1, la longueur de chacun des deux plis 12,13, ainsi que la zone de fixation de l'extrémité 13' sur la toile enduite double face 8 sont telles que l'arceau 5, après jantage, est en contact uniquement avec le manchon 1O. Etant donné que la face 13a du pli 13 du manchon 1O qui est en contact avec l'arceau 5 est une face non enduite , on obtient un glissement optimal du manchon sur l'arceau 5 lors du positionnement de la bâche 6 et de la mise en tension du câble 11 lors de l'opération de jantage.

Du fait de l'existence du manchon 1O et du choix de sa structure, on ne remarque aucun pli ni cassure préjudiciable malgré la déformation qui est due à la différence de longueur existant sur le manchon d'une part au niveau du bord 9 et d'autre part au niveau du câble 11, du fait de la courbure de l'arceau 5.

Cette déformation peut être comprise entre 5 et 1O%, dans l'exemple précité.

Sur la figure 3 on a représenté les deux arceaux extrêmes 5a et 5b sur lesquels sont jantées d'une part la bâche de liaison 7 et d'autre part les deux bâches 6a pour le premier module et 6b pour le second module.

On dispose d'abord sur les deux arceaux 5a et 5b la bâche de liaison 7, dans un état relativement détendu. Pour ce faire les deux câbles 14 et 15 de ladite bâche de liaison 7 sont fixés au sol à l'aide d'un dispositif de fixation et de tension,à vis , non représenté, mais sans que soit exercée une tension importante.

La bâche de liaison 7 a la même structure que les deux bâches modulaires 6a et 6b. Elle ne diffère que par la longueur réduite de la toile

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16 enduite double face. Ses deux bords opposés 17,18 sont eux aussi fixés à deux manchons 19 et 20, à l'intérieur desquels coulissent les deux câbles 14 et 15.

Une fois que la bâche de liaison 7 a été disposée par dessus les deux arceaux 5a et 5b, les manchons 19 et 20 recouvrant partiellement chacun des arceaux 5a et 5b, et la toile enduite double face 16 étant à l'état relativement détendu, on peut placer une première bâche modulaire 6a pour que celle-ci soit jantée sur le premier arceau 5a. Pour ce faire il suffit de disposer le manchon 10a par dessus la toile enduite double face 16 recouvrant l'arceau 5a jusqu'à ce que le câble 11a vienne en position de jantage, comme cela est représenté à la figure 3. Cette opération réalisée, il suffit de faire de même pour la seconde bâche modulaire 6b , jusqu'à jantage de celle-ci sur l'arceau 5b.

Le positionnement optimum est montré à la figure 3, selon lequel les deux bâches modulaires 6a et 6b sont parfaitement jantées respectivement sur les arceaux 5a et 5b et la toile enduite double face 16 de la bâche de liaison 7 est tendue entre les deux câbles 11a et 11b.

On obtient une parfaite étanchéité au niveau de cette liaison intermodulaire , qui de plus fait office de gouttière d'évacuation des eaux de pluie.

Cette présentation en modules permet d'éviter la confection de bâches de grande dimension qui non seulement est très coûteuse mais également très lourde à poser , ce qui pourrait limiter la longueur des installations.

De préférence chaque bâche comporte des éléments de renfort 21, représentés schématiquement sur la figure 2, qui sont destinés à bloquer dimensionnellement la toile enduite double face qui constitue la bâche à proprement parler. Ces éléments de renfort sont situés longitudinalement par rapport à l'installation. Il s'agit par exemple d'un tissu technique de haute résistance mécanique et de faible allongement et qui est rapporté, de manière à lui être solidaire, sur le tissu enduit. En particulier le tissu

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technique servant de renfort longitudinal est réalisé à partir du tissu enduit simple face, constitutif du manchon de recouvrement. L'application de cette bande de renfort 21 sur le tissu enduit double face peut être obtenue par thermosoudage, la face enduite de la bande de renfort 21 étant en contact avec le tissu enduit double face constituant la bâche.

La fermeture de l'installation, à chacune de ses extrémités peut être obtenue à l'aide de pignons 22, dont une représentation schématique montrée à la figure 4.

Ce pignon 22 est constituée , dans l'exemple ainsi illustré, de trois bâches à câbles 23,24,25 et de deux barres de traverse 26,27.

La première barre de traverse 26 est fixée, au niveau du sol, entre les parties basses 28,29 des deux montants opposés du même arceau 3O d'extrémité, correspondant audit pignon 22. La seconde barre de traverse 27 est fixée également entre les deux montants opposés de l'arceau 3O mais à une hauteur H, suffisante pour permettre le passage d'une personne et éventuellement des produits à stocker à l'intérieur de l'installation.

La première bâche à câbles 23 est destinée à être jantée sur la partie supérieure de l'arceau 3O et fixée à la seconde traverse 27. Pour cela des moyens de mise sous tension 31 sont fixés à l'arceau 3O au niveau de la seconde traverse. De plus des moyens d'accrochage 32 sont prévus pour solidariser cette première bâche 23 de pignon avec la seconde traverse 27.

On comprend que cette première bâche 23 de pignon a la forme d'un segment circulaire avec le câble qui est fixé le long du bord en arc de cercle du segment. Selon un mode de réalisation, le bord 33 correspondant à la corde du segment circulaire est pourvu soit d'un ourlet soit d'un manchon rapporté 38, permettant l'introduction par coulissement d'une tige 39, par exemple d'un jonc composite. De plus , de manière espacée, ladite bâche 23 comporte, de manière espacée et à proximité dudit bord 33 , des encoches 4O par lesquelles est accessible la tige 39 introduite dans l'ourlet ou le manchon 38. Ainsi les moyens d'accrochage consistent dans

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des lanières 41 qui sont placées au niveau des encoches 4O à la fois autour de la seconde barre de traverse 27 et de la tige 39.

Les deuxième et troisième bâches de pignon 24,25 ont la même structure, étant symétriques par rapport au plan longitudinal de l'installation.

Chacune de ces deux bâches 24,25 a une forme qui est sensiblement celle d'un trapèze rectangle. Comme cela apparaît sur la figure 4, les deux côtés parallèles 34,35 sont destinés à être fixés respectivement sur la seconde et la première barres de traverse 27,26 ; le côté 36, perpendiculaire aux deux premiers 34,35, a une hauteur H ; le quatrième côté 37, oblique, a en réalité une forme courbe, étant destiné à être janté sur la portion de l'arceau 3O entre la première et la seconde traverses 26,27. Pour cela la bâche à câbles 24 est munie d'un câble, le long du quatrième bord 37 ; de plus l'installation comporte des moyens de mise sous tension dudit câble, situés au niveau de la première et de la seconde traverses. Enfin il est prévu des moyens d'accrochage permettant de solidariser ladite seconde bâche 24 avec les deux barres de traverse 26,27. Ces moyens d'accrochage peuvent être identiques à ceux prévus pour la première bâche 23.

Dans l'exemple illustré à la figure 4, la seconde et la troisième bâche de pignon 24,25 délimitent, avec la première bâche 23, un espace 38, faisant office de porte de passage. Cet espace 38 peut lui-même être fermé à l'aide d'une quatrième bâche , non représentée, par exemple montée coulissante par des moyens appropriés entre la première et la seconde barres de traverse 26,27.

Comme on peut le comprendre, si l'on veut une meilleure tenue des deuxième et troisième bâches 24,25, il est possible de disposer entre la première et la seconde barres de traverse 26,27 des montants verticaux sur lesquels pourront être accrochées les bâches latérales 24,25 grâce aux moyens d'accrochage précités.

Le mode de réalisation, décrit ci-dessus, des moyens d'accrochage n'est pas limité au pignon. La mise en tension d'une bâche de toiture peut

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être avantageusement complétée grâce à un système similaire. Dans ce cas chaque bord longitudinal 42 de ladite bâche comporte d'une part un ourlet ou un manchon rapporté 43, dans lequel est introduit par coulissement une tige 44, par exemple un jonc en matériau composite et d'autre part, de manière espacée, des encoches 45 par lesquelles est accessible ladite tige 44. L'accrochage de la bâche et sa mise en tension sont obtenus grâce à une sangle 46 passant dans l'encoche 45 et enserrant à la fois la tige 44 et une traverse longitudinale 48 disposée entre les pieds de deux arceaux successifs, quasiment au ras du sol, avec un espace suffisant pour le passage de ladite sangle. Cette disposition rend particulièrement aisés le montage et le démontage des bâches.

REVENDICATIONS

1. Installation constituée d'une structure en arceaux, recouverte au moins en toiture d'au moins une bâche à câbles, caractérisée en ce que la structure en arceaux est tubulaire et en ce que la bâche comporte un tissu enduit dont les bords opposés sont solidaires de câbles de mise sous tension.

2. Installation selon la revendication 1 caractérisée en ce que la structure en arceaux comporte des pieds qui sont arrimés au sol et les arceaux sont constitués de tubes creux cintrés qui sont emboîtés dans les pieds.

3. Installation selon la revendication 1 ou la revendication 2 ,caractérisée en ce que la bâche est réalisée à partir d'un tissu enduit double face et comporte des éléments longitudinaux de renfort consistant en des bandes (21) qui sont rapprochées sur le tissu enduit et qui sont eux-mêmes réalisés dans un tissu technique à forte résistance et à faible allongement.

4. Installation selon les revendications 1 à 3 caractérisée en ce qu'elle est constituée d'au moins deux modules (2,3) comprenant chacun le même nombre d'arceaux (5) recouverts par une bâche modulaire, de longueur prédéterminée , tendue par dessus lesdits arceaux et en ce qu'elle comprend au moins une bâche à câbles de liaison (4), de faible longueur, tendue par dessus deux arceaux adjacents (5a, 5b) rapprochés de chacun des modules (2,3).

5. Installation selon les revendications 1 à 4 caractérisée en ce qu'elle comporte des pignons frontaux , comportant des bâches à câbles, tendues sur les arceaux tubulaires d'extrémités.

6. Installation selon la revendication 5 caractérisée en ce qu'au moins un pignon frontal comporte :

a) deux barres de traverse (26,27) fixées entre les deux montants opposés d'un même arceau (3O) d'extrémité, la première (26) traverse au niveau du sol et la seconde (27) à une hauteur déterminée (H),

b) une première bâche à câbles (23) en forme de segment circulaire dont le câble est fixé le long du bord en arc de cercle , des moyens (31) de mise

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sous tension du câble de cette première bâche (23) qui sont fixés à l'arceau (3O) au niveau de la seconde traverse (27) et des moyens d'accrochage (33) de ladite première bâche (23) à ladite seconde traverse, et

c) au moins une seconde bâche à câbles (24,25) ayant sensiblement la forme d'un trapèze rectangle dont le côté oblique (37) est en arc de cercle et muni d'un câble apte à être tendu le long de l'arceau (3O) entre la première (26) et la deuxième (27) traverses , et des moyens d'accrochage de ladite deuxième bâche à la première et à la deuxième traverses selon les deux côtés (34,35) parallèles du trapèze.

7. Installation selon l'une des revendications 1 ou 6 caractérisée en ce que la bâche à câble (6,23) comporte, le long d'un bord non câblé (33,42), un ourlet ou manchon (38,43) , apte à permettre l'introduction par coulissement d'une tige (39,44) et des encoches (4O,45) par lesquelles est accessible la tige (39,44) introduite dans l'ourlet ou le manchon (38,43) et en ce qu'elle comporte des éléments flexibles (41,46) de fixation, chaque élément passant dans une encoche (4O,45) et enserrant à la fois ladite tige (39,44) et une traverse (27,48) fixée entre deux arceaux.

8. Bâche à câbles pour couverture d'installation avec structure tubulaire en arceaux selon l'une des revendications 1 à 7, comportant des câbles qui sont fixés le long d'au moins deux de ses bords opposés pour être jantés par dessus les arceaux caractérisée en ce qu'elle est réalisée dans un premier tissu (8) enduit double face , en ce que chaque câble (11) est logé coulissant dans un second tissu replié , formant manchon (1O) de recouvrement de l'arceau (5) , qui est fixé le long d'un bord (9) dudit premier tissu (8), et en ce que le second tissu a une structure apte à absorber la déformation occasionnée par le jantage entre les deux bords du manchon (1O).

9. Bâche à câbles selon la revendication 8 caractérisée en ce que le second tissu a une structure apte à absorber une déformation comprise entre 5 et 1O%.

10. Bâche à câbles selon l'une des revendications 8 ou 9 caractérisée en

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ce que le second tissu constitutif du manchon (1O) de recouvrement est un tissu enduit simple face.

11. Bâche à câbles selon la revendication 1O caractérisée en ce que la matière formant l'enduction du premier et du second tissus est la même et la face enduite du manchon (1O) est tournée vers l'intérieur de celui-ci, la fixation du manchon sur le premier tissu étant réalisée par soudage à l'aide de l'enduction.

12. Bâche à câbles selon la revendication 11 caractérisée en ce qu'elle est constituée d'un premier tissu en polyester enduit sur les deux faces de PVC, faisant de l'ordre de 5OO à 65Og/m^2 et constituée de fils de l'ordre de 11OO dtex ; d'un second tissu, pour manchon (1O), en polyester enduit sur une face de PVC, faisant de l'ordre de 65O à 75Og/m^2 avec d'une part des fils de l'ordre de 11OO dtex et d'autre part des fils de l'ordre de 22OOdtex.

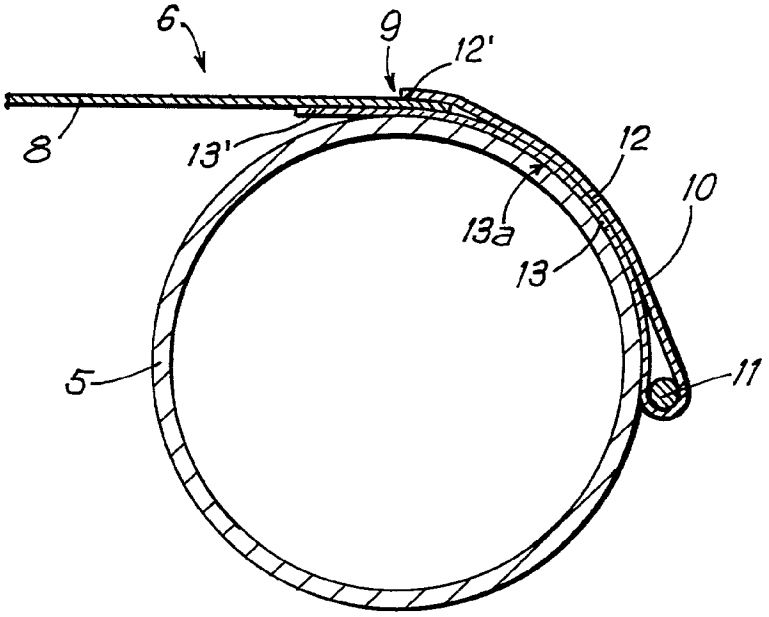
13. Bâche à câbles selon l'une des revendications 11 ou 12 caractérisée en ce que le câble (1O) de mise sous tension est un câble qui ne comporte pas d'enduction PVC.

14. Bâche à câbles selon la revendication 13 caractérisée en ce que le câble est un câble d'acier , monotoron, recouvert d'une gaine de polyéthylène.

15. Bâche à câbles selon les revendications 8 à 14 caractérisée en ce que le pli du manchon qui est tourné vers l'arceau (5) à recouvrir est un tissu dont la face extérieure (13a) est non-enduite, ledit pli ayant une longueur telle que l'arceau n'est en contact qu'avec ladite face non-enduite, après jantage.

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FIG.1



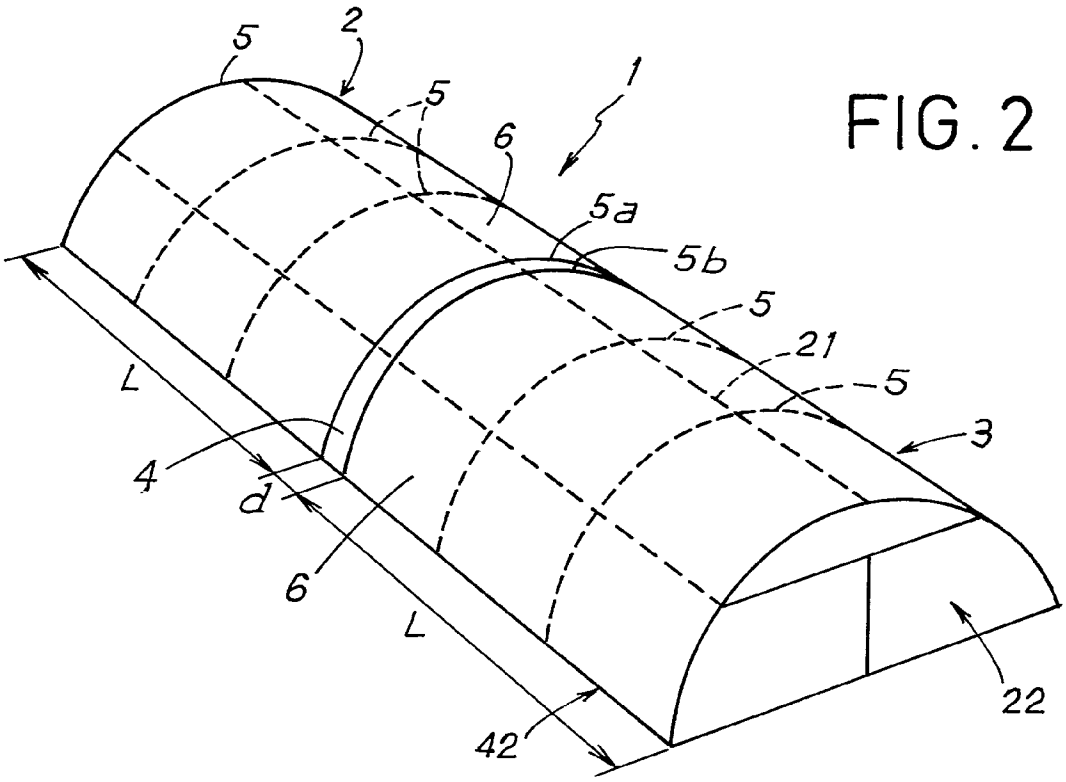


FIG. 2

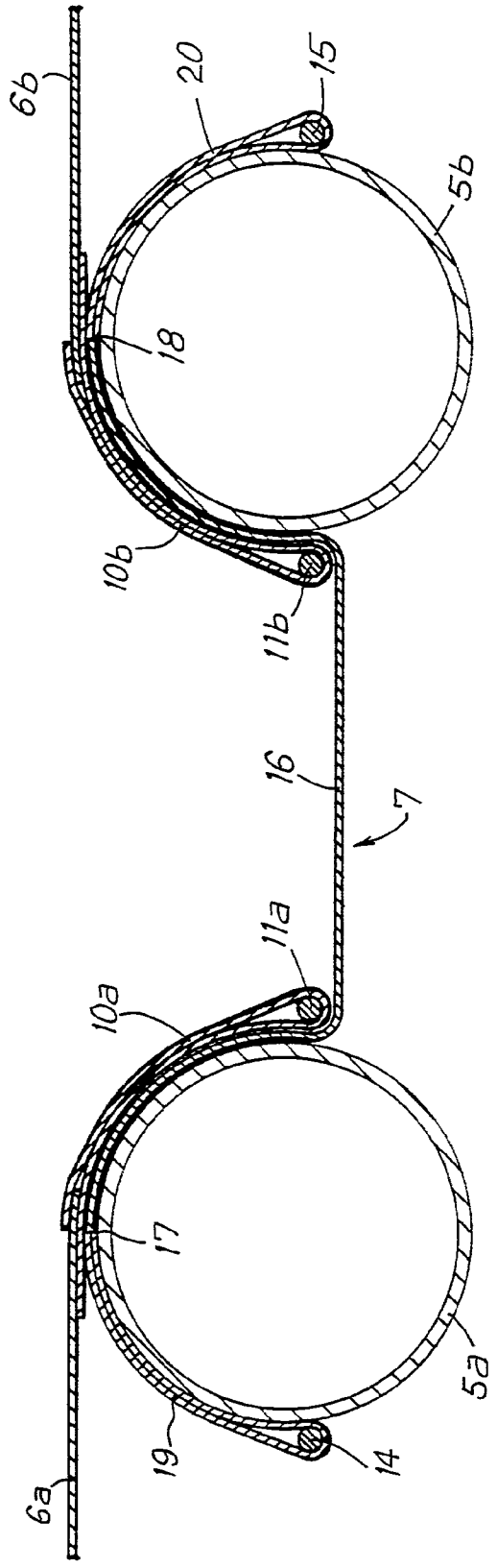

6b
20
15
5b
18
10b
11b
16
7
11a
10a
17
5a
19
14
6a

FIG. 3

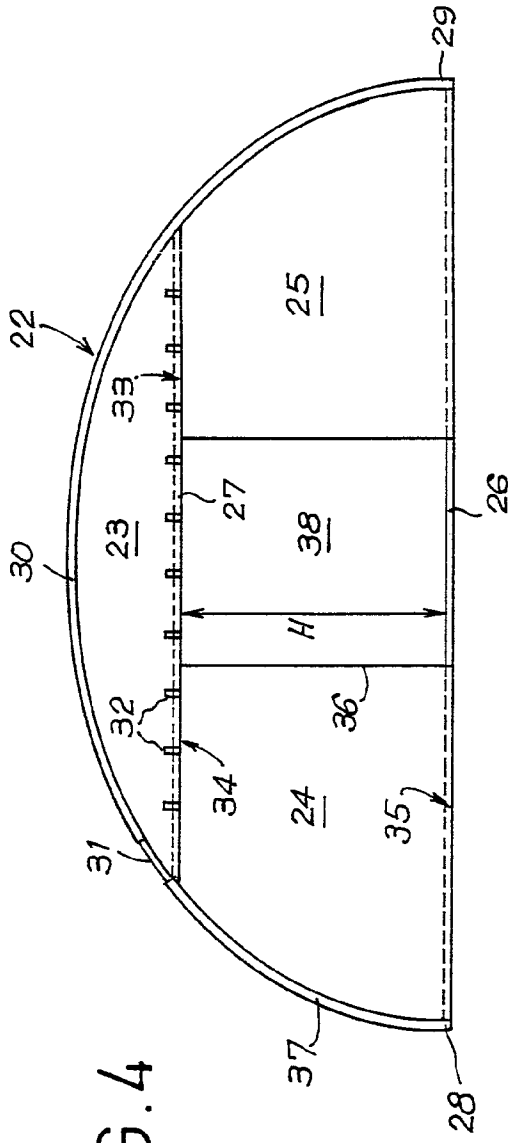
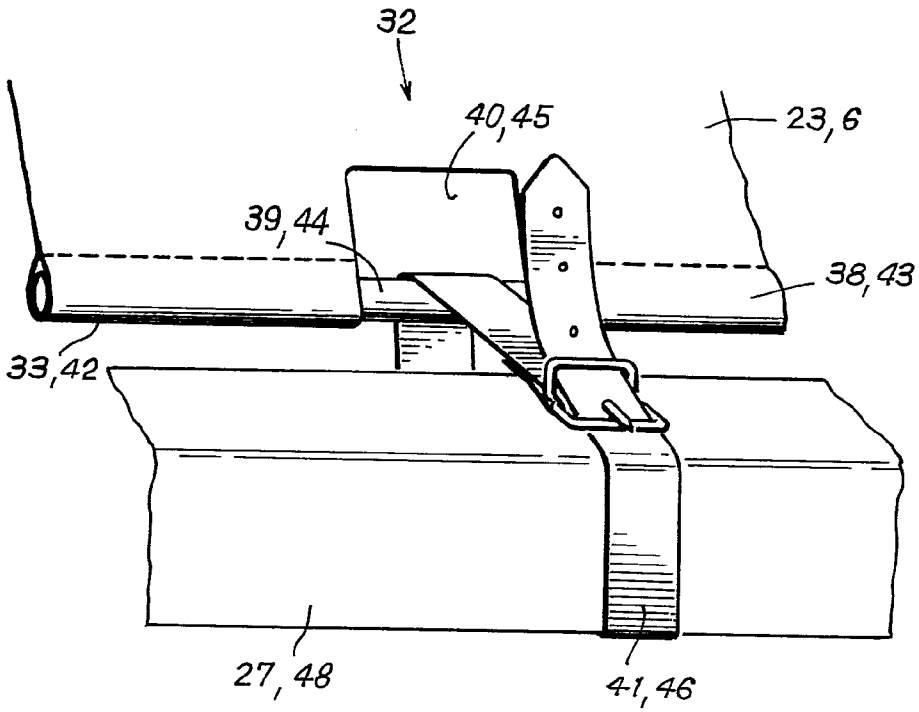

29
22
25
33
27
26
30
23
38
H
32
36
34
24
35
31
37
28

FIG. 4

FIG. 5



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RAPPORT DE RECHERCHE PRELIMINAIRE

établi sur la base des dernières revendications déposées avant le commencement de la recherche

2705718
N° d'enregistrement national

FA 492326
FR 9306616

DOCUMENTS CONSIDERES COMME PERTINENTS		Revendications concernées de la demande examinée
Catégorie	Citation du document avec indication, en cas de besoin, des parties pertinentes	
A	FR-A-2 643 934 (BERANGER FENOUILLET) * abrégé; figure 1 * ---	1,2
A	EP-A-0 267 590 (THEIS) * abrégé; figure 2 * ---	1
A	EP-A-0 056 561 (SCHMID) * abrégé; figures 1-3 * ---	1,4,5
A	DE-A-23 45 220 (FA. FILCLAIR) * le document en entier * ---	1,4
A	DE-A-29 03 169 (LANG) * revendication 1; figures 1-5 * ---	1
A,D	FR-A-2 673 657 (PETIARD) ---	
A	US-A-2 856 941 (O`NEAL) -----	

DOMAINES TECHNIQUES RECHERCHES (Int.Cl.5)

E04H

Date d'achèvement de la recherche: 11 Mai 1994

Examinateur: Clasing, M

CATEGORIE DES DOCUMENTS CITES

X : particulièrement pertinent à lui seul
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A : pertinent à l'encontre d'au moins une revendication ou arrière-plan technologique général
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T : théorie ou principe à la base de l'invention
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PUB-NO: FR002705718A1

DOCUMENT-IDENTIFIER: FR 2705718 A1

TITLE: Installation having an arched tubular structure covered with at least one tarpaulin with incorporated cables and corresponding tarpaulin with incorporated cables

PUBN-DATE: December 2, 1994

PATENT-FAMILY-ID: 9447694

INVENTOR-INFORMATION:

NAME	COUNTRY
ARNAULD THERY	

APPLICANT:

NAME	COUNTRY
COMPAX SA	FR

APPL-NO: FR 9306616 A

APPL-DATE: May 27, 1993

PRIORITY-DATA:

PRIORITY-NO	PRIORITY-APPL-DATE
FR 9306616 A	19930527

CPC-CURRENT:

TYPE	CPC	DATE
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TYPE	IPC	DATE
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REF-CITED:

PHASE-COUNTRY/NUMBER/KIND/DATE-NPL-INFO

SER US 2856941 A 19581021
SER FR 2673657 A1 19920911
SER DE 2903169 A1 19800731
SER DE 2345220 A1 19740328
SER EP 0056561 A1 19820728
SER EP 0267590 A1 19880518
SER FR 2643934 A1 19900907

ABSTRACT:

The invention consists of an arched structure covered, at least as regards the roofing, with at least one tarpaulin with incorporated cables. According to the invention, the arched structure is tubular and the tarpaulin comprises a coated fabric whose opposite edges are fastened to tensioning cables. The tarpaulin with incorporated cables, for covering an installation of the invention with an arched tubular structure comprises cables which are fixed along at least two of its opposite edges in order to be rimmed over the top of the arches. Characteristically, the tarpaulin is made from a first fabric (8) coated on both sides; each cable (11) is housed so as to be able to slide in a second, folded-over fabric that forms a sleeve (10) for covering the arch (5) and is fixed along an edge (9) of the said first fabric (8); the second fabric has a structure suitable for absorbing the deformation arising from the rimming between the two edges of the sleeve (10).

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(56) **Liste des documents cités dans le rapport de recherche préliminaire :** *Se reporter à la fin du présent fascicule*

(60) **Références à d'autres documents nationaux apparentés :**

(71) **Demandeur(s) :** *DECATHLON Société anonyme* — FR.

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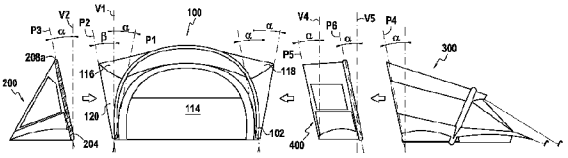
(73) **Titulaire(s) :** DECATHLON Société anonyme.

(74) **Mandataire(s) :** CABINET BEAU DE LOMENIE Société civile.

(54) SYSTEME DE TENTE MODULAIRE.

(57) L'invention porte sur un système de tente modulaire comprenant un module de tente central (100) qui comporte :

- une toile de tente (104) dans laquelle est ménagée au moins une ouverture (106a, 106b), ladite ouverture étant munie d'un premier moyen de fixation (112a, 112b) et s'étendant dans une première surface (P1) inclinée par rapport à un plan vertical ;
- au moins une casquette (116, 118) s'étendant autour de l'ouverture (106a, 106b) tout en faisant saillie depuis la toile de tente vers l'extérieur du module de tente central, la casquette présentant un bord périphérique (116c) muni d'un deuxième moyen de fixation (120) et s'étendant dans une seconde surface (P2) inclinée par rapport au plan vertical (V1), la seconde surface présentant, par rapport au plan vertical, une inclinaison opposée à celle de la première surface.



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Arrière-plan de l'invention

La présente invention porte sur le domaine des tentes. Il concerne plus particulièrement les tentes modulaires, à savoir les tentes constituées de modules qui peuvent être assemblés les uns aux autres selon les besoins de l'utilisateur.

Un tel système modulaire est notamment décrit dans le document US 6 273 114. Il comporte un module de tente central 4 et une pluralité de modules de tente complémentaires 6 fixés au module de tente central 4.

Le module de tente central abrite une pièce de vie principale, tandis que les modules de tente complémentaires forment des chambres annexes.

Dans cet art antérieur, les modules de tente complémentaire sont identiques et, de surcroît, ils sont conformés pour être fixés uniquement sur deux faces latérales opposées du module de tente central.

En d'autres termes, le système modulaire de l'art antérieur, ne propose qu'une seule configuration.

Objet et résumé de l'invention

Un but de la présente invention est de proposer un système de tente modulaire qui présente une plus grande modularité en permettant davantage de combinaisons ou de configurations d'assemblage.

A cet effet, l'invention porte tout d'abord sur un module de tente central comportant :

- une toile de tente dans laquelle est ménagée au moins une ouverture, ladite première ouverture étant munie d'un premier moyen de fixation et s'étendant dans une première surface inclinée par rapport à un plan vertical ;
- au moins une casquette s'étendant autour de la première ouverture tout en faisant saillie depuis la toile de tente vers l'extérieur du module de tente central, la casquette présentant un bord périphérique muni d'un deuxième moyen de fixation et s'étendant dans une seconde surface inclinée par rapport au plan vertical, la seconde surface présentant, par rapport au plan vertical, une inclinaison opposée à celle de la première surface.

Par casquette, on entend une extension, rigide ou souple, faisant saillie depuis la toile de tente vers l'extérieur de manière à former un auvent.

Le premier moyen de fixation s'étend préférentiellement selon une première courbe en forme d'arche qui s'étend dans la première surface inclinée. De même, le deuxième moyen de fixation s'étend préférentiellement selon une deuxième courbe en forme d'arche qui s'étend dans la deuxième surface inclinée. De préférence, les première et deuxième surfaces inclinées sont planes ou légèrement incurvées.

De préférence, la première surface est inclinée de sorte qu'elle s'étend depuis la base vers le sommet du module de tente central. La seconde surface est quant à elle inclinée de manière opposée de sorte qu'elle s'étend de la base vers une direction opposée au sommet du module de tente central.

Le module de tente central selon l'invention est configuré pour être attaché à différents types de modules de tente complémentaires qui peuvent être reliés par l'intermédiaire du premier moyen de fixation, ou du deuxième moyen de fixation.

De préférence, le module de tente central comporte plusieurs ouvertures munies de premiers moyens de fixation, et, encore de préférence, il est prévu une ouverture dans chacune des faces latérales du module de tente central. Ainsi, lorsque le module de tente central présente une base rectangulaire et quatre pans de toile définissant quatre faces latérales, le module de tente central peut être pourvu de quatre ouvertures, grâce à quoi il est possible d'y connecter directement jusqu'à quatre modules de tente complémentaires.

Encore de préférence, chaque ouverture est munie d'une casquette faisant saillie depuis la toile de tente et ayant un deuxième moyen de fixation. Un intérêt est de pouvoir monter des modules de tente complémentaires de types différents au module de tente central. On comprend en effet que certains modules de tente complémentaires ont des moyens de fixation compatibles avec le ou les premiers moyens de fixation de ou des ouvertures, tandis que d'autres modules de tente complémentaires ont des moyens de fixation compatibles avec le ou les deuxièmes moyens de fixation de la ou des casquettes.

En outre, comme il sera décrit plus en détail ci-après, les modules de tente complémentaires peuvent être assemblés entre eux, grâce à quoi l'invention permet de concevoir des systèmes modulaires variés.

De façon avantageuse, le module de tente central comporte en outre un pan de porte dont le pourtour comprend un organe de fixation arrangé pour coopérer avec le premier moyen de fixation de l'ouverture ou bien avec le deuxième moyen de fixation. Ce pan de porte est avantageusement utilisé pour obturer l'ouverture, notamment lorsque cette dernière n'est pas reliée à un module de tente complémentaire.

De manière avantageuse, les premier et deuxième moyens de fixation présentent la même longueur.

En conséquence, les moyens de fixation des modules de tente complémentaires présentent également la même longueur. Un intérêt, qui sera développé plus en détail ci-après, est notamment de pouvoir fixer ensemble deux modules de tente complémentaires afin de constituer des unités autonomes et autoportées.

Selon une variante, les premier et deuxième moyens de fixation sont des fermetures à glissières. Ces fermetures à glissières s'étendent le long des première et deuxième boucles précitées.

Selon une autre variante, les premier et deuxième moyens de fixation sont constitués de boucles de fixation. Ces boucles de fixation s'étendent également le long des première et deuxième boucles précitées.

Selon un mode de réalisation avantageux, les première et seconde surfaces sont sensiblement symétriques par rapport au plan vertical.

De préférence, l'ange entre le plan vertical et l'une ou l'autre des première et seconde surfaces est compris entre 10° et 40°.

De manière préférentielle, le bord périphérique de la casquette comporte en outre un rabat d'étanchéité recouvrant le deuxième moyen de fixation de la casquette. Ce rabat d'étanchéité permet d'assurer l'étanchéité, en cas de pluie, de la jonction entre le module de tente central et le module de tente complémentaire fixé au deuxième moyen de fixation.

On comprend par ailleurs que la casquette, qui s'étend autour de l'ouverture et donc autour du premier moyen de fixation, permet quant à elle d'assurer l'étanchéité de la jonction entre le module de tente central et le module de tente complémentaire fixé au premier moyen de fixation.

La présente invention porte en outre sur un abri modulaire qui comporte un module de tente central selon l'invention et au moins un module de tente complémentaire configuré pour être attaché au module de tente central et/ou à un autre module de tente complémentaire.

Ledit au moins un module de tente complémentaire est configuré pour être attaché au module de tente central par l'intermédiaire du premier moyen de fixation ou du deuxième moyen de fixation.

De préférence, l'abri modulaire comporte plusieurs types de modules de tente complémentaires, certains pouvant être attachés au module de tente central par l'intermédiaire du premier moyen de fixation, alors que d'autres peuvent être attachés au module de tente central par l'intermédiaire du deuxième moyen de fixation.

Le moyen de fixation d'un module de tente complémentaire est donc configuré pour être attaché à l'un ou l'autre des premier et deuxième moyens de fixation du module de tente central. Par conséquent, le moyen de fixation du module de tente complémentaire qui est configuré pour être attaché avec le premier moyen de fixation du module de tente central pourra être attaché à un autre module de tente complémentaire par l'intermédiaire du moyen de fixation du module de tente complémentaire qui est configuré pour être attaché avec le deuxième de moyen de fixation du module de tente central. Il est ainsi possible, de manière particulièrement avantageuse, d'attacher ensemble deux modules de tente complémentaires.

Selon un premier mode de réalisation, l'abri modulaire comporte au moins un module de tente complémentaire d'un premier type configuré pour être attaché au module de tente central ou à un module de tente complémentaire d'un autre type ; le module de tente complémentaire du premier type comporte une face d'entrée présentant un contour périphérique muni d'un dispositif de fixation, le contour périphérique s'étendant dans une surface qui est inclinée par rapport à un plan vertical ; la surface dans laquelle s'étend le contour périphérique du module de tente complémentaire du premier type présente la même inclinaison que la seconde surface dans laquelle s'étend le bord périphérique de la casquette du module de tente central, et lorsque le module de tente complémentaire du premier type est attaché au module de tente central, le dispositif de fixation du module de tente

complémentaire du premier type est assemblé au deuxième moyen de fixation du module de tente central.

On entend par face d'entrée la face du module de tente complémentaire du premier type par laquelle l'utilisateur entre dans ledit module.

Ce module de tente complémentaire du premier type présente de préférence, mais pas nécessairement, une chambre intérieure munie d'une entrée débouchant dans la face d'entrée.

De manière avantageuse, le dispositif de fixation du module de tente complémentaire du premier type est de même longueur que le deuxième moyen de fixation du module de tente central.

De préférence, le dispositif de fixation du module de tente complémentaire du premier type et le deuxième moyen de fixation du module de tente central sont des fermetures à glissières.

Selon une variante, le dispositif de fixation du module de tente complémentaire du premier type et le deuxième moyen de fixation du module de tente central sont constitués de boucles d'attaches. Ces boucles sont par exemples constituées d'éléments mâles venant s'emboiter avec des éléments femelles. D'autres types de fixation pourront être envisagés.

Avantageusement, le module de tente complémentaire du premier type comporte un boudin formant arceau qui entoure la face d'entrée, le dispositif de fixation étant disposé au-dessus du boudin. De préférence, il s'agit d'un boudin gonflable. Ce boudin permet de donner la forme d'arceau ou d'arche à la face d'entrée. Il permet également de rigidifier la jonction entre la casquette et le module de tente complémentaire du premier type.

Selon un deuxième mode de réalisation, l'abri modulaire selon l'invention comporte au moins un module de tente complémentaire d'un deuxième type, différent du premier type, configuré pour être attaché au module de tente central ou à un module de tente complémentaire d'un autre type ; le module de tente complémentaire du deuxième type comporte une face d'entrée présentant un contour périphérique muni d'un dispositif de fixation, le contour périphérique s'étendant dans une surface qui présente la même inclinaison que la première surface dans laquelle s'étend le premier moyen de fixation du module de tente central, et

lorsque le module de tente complémentaire du deuxième type est attaché au module de tente central, le dispositif de fixation est assemblé au premier moyen de fixation, et le contour périphérique vient se loger en dessous de la casquette.

Sans sortir du cadre de la présente invention, l'abri modulaire peut comprendre à la fois au moins un module de tente complémentaire du premier type et au moins un module de tente complémentaire du deuxième type.

Par ailleurs, le module de tente complémentaire du premier type peut être attaché au module de tente complémentaire du deuxième type. Pour ce faire, on assemble le dispositif de fixation du module de tente complémentaire du premier type avec le dispositif de fixation du module de tente complémentaire du deuxième type. Cela permet de former une unité indépendante du module de tente central. Le cas échéant, le module de tente complémentaire du premier type et/ou le module de tente complémentaire du deuxième type pourront comprendre une porte d'entrée afin d'accéder à cette unité autonome.

Avantageusement, le dispositif de fixation du module de tente complémentaire du deuxième type est de même longueur que le premier moyen de fixation du module de tente central.

De préférence, le dispositif de fixation du module de tente complémentaire du deuxième type et le premier moyen de fixation du module de tente central sont des fermetures à glissières.

Selon une variante, le dispositif de fixation du module de tente complémentaire du deuxième type et le premier moyen de fixation du module de tente central sont constitués de boucles d'attaches, de préférence du même type que celles décrites plus haut.

Là-encore, on entend par face d'entrée la face du module de tente complémentaire du deuxième type par laquelle l'utilisateur entre dans ledit module.

Ce module de tente complémentaire du deuxième type présente de préférence, mais pas nécessairement, une chambre intérieure munie d'une entrée débouchant dans la face d'entrée.

Selon un troisième mode de réalisation, l'abri modulaire comporte au moins un module de tente complémentaire d'un troisième type, distinct des modules de tente complémentaires des premier et deuxième types,

configuré pour être attaché au module de tente central et/ou à un module de tente complémentaire d'un autre type ; le module de tente complémentaire du troisième type comporte une première face d'entrée présentant un premier contour périphérique muni d'un premier dispositif de fixation, le premier contour périphérique s'étendant dans une troisième surface inclinée par rapport à un plan vertical et qui présente la même inclinaison que la première surface du module de tente central ;le premier dispositif de fixation peut être assemblé de manière démontable au premier moyen de fixation du module de tente central ; le module de tente complémentaire du troisième type comporte en outre une seconde face d'entrée, opposée à la première entrée, présentant un second contour périphérique muni d'un second dispositif de fixation, le second contour périphérique s'étendant dans une quatrième surface qui est parallèle à la troisième surface; le second dispositif de fixation peut être assemblé de manière démontable au deuxième moyen de fixation, grâce à quoi le module de tente complémentaire du troisième type peut être attaché au module de tente central et/ou à un module de tente complémentaire d'un autre type par l'intermédiaire de son premier dispositif de fixation ou de son second dispositif de fixation.

Ce module de tente complémentaire du troisième type présente de préférence, mais pas nécessairement, une chambre intérieure munie d'une entrée débouchant dans la première et/ou la seconde face d'entrée.

L'abri modulaire selon l'invention peut comprendre à la fois au moins un module de tente complémentaire du premier type, au moins un module de tente complémentaire du deuxième type, et au moins un module de module de tente complémentaire du troisième type, ou bien uniquement un ou plusieurs desdits modules de tente complémentaires.

Par ailleurs, le module de tente complémentaire du premier type peut être attaché au module de tente complémentaire du troisième type.

Pour ce faire, on assemble le dispositif de fixation du module de tente complémentaire du premier type avec le premier dispositif de fixation du module de tente complémentaire du troisième type.

L'unité constituée de l'assemblage du module de tente complémentaire du premier type avec le module de tente complémentaire du troisième type peut être avantageusement attachée au module de tente central en assemblant le second dispositif de fixation du module de

tente complémentaire du troisième type avec le deuxième moyen de fixation du module de tente central.

En outre, le module de tente complémentaire du deuxième type peut être attaché au module de tente complémentaire du troisième type.

Pour ce faire, on assemble le dispositif de fixation du module de tente complémentaire du deuxième type avec le second dispositif de fixation du module de tente complémentaire du troisième type.

L'unité constituée de l'assemblage du module de tente complémentaire du deuxième type avec le module de tente complémentaire du troisième type peut être avantageusement attachée au module de tente central en assemblant le premier dispositif de fixation du module de tente complémentaire du troisième type avec le premier moyen de fixation du module de tente central.

L'invention permet également de former une unité autoportée indépendante du module de tente central. Le cas échéant, le module de tente complémentaire du premier type et le module de tente complémentaire du deuxième type sont assemblés au module de tente complémentaire du troisième type.

Avantageusement, les premier et second dispositifs de fixation du module de tente complémentaire du troisième type présentent respectivement la même longueur que les premier et deuxième moyens de fixation du module de tente central.

De préférence, les premier et second dispositifs de fixation sont des fermetures à glissières.

Selon une variante, les premier et second dispositifs de fixation sont constitués de boucles d'attaches, de préférence similaires aux boucles d'attache précitées.

Avantageusement, le module de tente complémentaire du troisième type comporte un boudin formant arceau qui entoure la seconde face d'entrée, et le deuxième dispositif de fixation est disposé au-dessus dudit boudin. Ce boudin est de préférence gonflable afin de faciliter le montage du module de tente complémentaire du troisième type. Il permet en outre de former la structure en arche de la seconde face d'entrée.

Selon un quatrième mode de réalisation, l'abri modulaire comporte deux modules de tente centraux reliés l'un à l'autre par le biais d'un module de tente complémentaire du troisième type.

Pour ce faire, le premier module de tente central est attaché à la première face d'entrée du module de tente complémentaire du troisième type, tandis que le second module de tente central est attaché à la seconde face d'entrée du module de tente complémentaire du troisième type.

Le module de tente complémentaire du troisième type permet donc de relier ensemble deux modules de tente centraux, ce qui permet d'agrandir significativement le volume de l'abri.

Selon un cinquième mode de réalisation, l'abri modulaire comporte un module de tente complémentaire du premier type et un module de tente complémentaire du deuxième type, les modules de tente complémentaires des premier et deuxième types étant attachés l'un à l'autre sans module de tente central. L'unité constituée de l'assemblage d'un module de tente complémentaire du premier type et d'un module de tente complémentaire du deuxième type est donc indépendante du module de tente central de l'abri modulaire.

Selon une variante, déjà mentionnée plus haut, l'abri modulaire comporte en outre un module de tente complémentaire du troisième type disposé entre le module de tente complémentaire du premier type et le module de tente complémentaire du deuxième type.

L'invention vise également à couvrir chacun des modules de tente complémentaire décrits ci-dessus.

A cet effet, l'invention concerne en outre un module de tente complémentaire d'un premier type configuré pour être attaché au module de tente central selon l'invention ou à un module de tente complémentaire d'un autre type ; ledit module de tente complémentaire du premier type comporte une face d'entrée présentant un contour périphérique muni d'un dispositif de fixation, le contour périphérique s'étendant dans une surface qui est inclinée par rapport à un plan vertical, la surface dans laquelle s'étend le contour périphérique du module de tente complémentaire du premier type présente la même inclinaison que la seconde surface dans laquelle s'étend le bord périphérique de la casquette du module de tente central, et lorsque le module de tente complémentaire du premier type est attaché au module de tente central, le dispositif de fixation du module de tente complémentaire du premier type est assemblé au deuxième moyen de fixation du module de tente central.

L'invention concerne en outre un module de tente complémentaire d'un deuxième type configuré pour être attaché au module de tente central selon l'invention, ou à un module de tente complémentaire d'un autre type ; le module de tente complémentaire du deuxième type comporte une face d'entrée présentant un contour périphérique muni d'un dispositif de fixation, le contour périphérique s'étendant dans une surface inclinée qui présente la même inclinaison que la première surface dans laquelle s'étend le premier moyen de fixation du module de tente central, et, lorsque le module de tente complémentaire du deuxième type est attaché au module de tente central, le dispositif de fixation est assemblé au premier moyen de fixation, et le contour périphérique vient se loger en dessous de la casquette.

L'invention concerne en outre un module de tente complémentaire d'un troisième type configuré pour être attaché au module de tente central selon l'invention, et/ou à un module de tente complémentaire d'un autre type ; le module de tente complémentaire du troisième type comporte une première face d'entrée présentant un premier contour périphérique muni d'un premier dispositif de fixation, le premier contour périphérique s'étendant dans une troisième surface inclinée par rapport à un plan vertical et qui présente la même inclinaison que la première surface du module de tente central ; le premier dispositif de fixation peut être assemblé de manière démontable au premier moyen de fixation du module de tente central, le module de tente complémentaire du troisième type comporte en outre une seconde face d'entrée, opposée à la première face d'entrée, présentant un second contour périphérique muni d'un second dispositif de fixation, le second contour périphérique s'étendant dans une quatrième surface qui est parallèle à la troisième surface ; le second dispositif de fixation peut être assemblé de manière démontable au deuxième moyen de fixation, grâce à quoi le module de tente complémentaire du troisième type peut être attaché au module de tente central et/ou à un module de tente complémentaire d'un autre type par l'intermédiaire de son premier dispositif de fixation ou de son second dispositif de fixation.

L'invention concerne enfin un ensemble modulaire comportant un module de tente complémentaire du premier type selon l'invention et un module de tente complémentaire du deuxième type selon l'invention, le

module de tente complémentaire du premier type étant attaché au module de tente complémentaire du deuxième type.

Avantageusement, l'abri modulaire comporte en outre un module de tente complémentaire du troisième type reliant le module de tente complémentaire du premier type au module de tente complémentaire du deuxième type.

Brève description des dessins

L'invention sera mieux comprise à la lecture de la description qui suit de modes de réalisation de l'invention donnés à titre d'exemples non limitatifs, en référence aux dessins annexés, sur lesquels :

- la figure **1** illustre un module de tente central conforme à la présente invention ;
- les figures **2**A et **2**B illustrent un module de tente complémentaire du premier type, en perspective et en vue de face ;
- les figures **3**A et **3**B illustrent un module de tente complémentaire du deuxième type, en perspective et en vue de face,
- la figure **4** est une vue en perspective d'un module de tente complémentaire du troisième type ;
- la figure **5** illustre un abri modulaire selon l'invention avant assemblage qui comporte un module de tente central, et des modules de tente complémentaires des premier, deuxième et troisième types ;
- la figure **6** illustre l'abri modulaire de la figure **5** une fois assemblé ;
- la figure **7** illustre un mode de réalisation de l'abri modulaire selon l'invention comprenant un module de tente central, un module de tente complémentaire du premier type et un module de tente complémentaire du deuxième type ;
- la figure **8** illustre un autre mode de réalisation de l'abri modulaire selon l'invention comprenant un module de tente central, un module de tente complémentaire du premier type,

deux modules de tente complémentaires du troisième type, et un module de tente complémentaire du deuxième type ;

- la figure **9** illustre un autre mode de réalisation de l'abri modulaire selon l'invention comprenant deux modules de tente centraux reliées l'un à l'autre par l'intermédiaire d'un module de tente complémentaire du troisième type, ainsi qu'un module de tente complémentaire du premier type, un autre module de tente complémentaire du troisième type et un module de tente complémentaire du deuxième type ; et
- la figure **10** illustre un mode de réalisation de l'abri modulaire dépourvu de module de tente central et comportant un module de tente complémentaire du troisième type assemblé à un module de tente complémentaire du premier type et à un module de tente complémentaire du deuxième type.

Description détaillée de l'invention

L'invention porte sur un système de tentes modulaires qui permet à l'utilisateur de concevoir l'abri qui lui convient en assemblant des modules les uns aux autres.

Le premier module, appelé module de tente central **100**, est illustré en figure **1**.

Le module de tente central **100** comprend une toile de tente portée par une paire d'arceaux croisés **102**.

Dans cet exemple, la toile de tente **104** est constituée d'une pluralité de pans attachés les uns aux autres afin de former la toile extérieure du module de tente central **100**.

Le module de tente central **100** présente dans cet exemple quatre faces latérales s'étendant depuis la base **108** du module de tente central **100**. Sur la figure **1**, ne sont visibles que les faces **106**a et **106**b qui sont sensiblement perpendiculaires l'une à l'autre.

Dans cet exemple, chacune des faces latérales est munie d'une ouverture **110**a, **110**b.

Sans sortir du cadre de l'invention, une seule des faces latérales ou bien certaines d'entre elles pourraient être munie d'une ouverture.

Chacune des ouvertures **110**a, **110**b est munie d'un premier moyen de fixation **112**a, **112**b qui, dans cet exemple, s'étend selon le pourtour de ladite ouverture.

Selon le mode de réalisation de la figure **1**, l'ouverture **110**a est obturée par un pan de porte **114** rapporté dont le pourtour comprend un organe de fixation **114**a qui coopère avec le premier moyen de fixation **112**a de l'ouverture **110**a.

Dans cet exemple, les premiers moyens de fixation **112**a, **112**b ainsi que l'organe de fixation **114**a du pan de porte **114** sont des fermetures à glissières.

Bien entendu, un pan de porte **114** similaire pourrait être monté sur la seconde face latérale **106**b afin d'obturer l'ouverture **110**b.

Pour chacune des ouvertures **110**a, **110**b, le premier moyen de fixation **112**a, **112**b s'étend selon une courbe qui présente sensiblement la forme d'une arche.

Cette arche s'étend dans une première surface **P1** qui est inclinée par rapport à un plan vertical.

La première surface **P1,** dans laquelle s'étend le premier moyen de fixation **112**a, est inclinée de sorte que le sommet de l'arche le long duquel s'étend le premier moyen de fixation est plus proche du centre de la base **108** du module de tente central **100** que ne l'est la base de ladite arche.

En d'autres termes, considérée depuis sa base vers le sommet du module de tente central, la première surface **P1** est inclinée vers l'intérieur du module de tente central.

Cette inclinaison est mieux visible sur la figure **5** qui montre notamment le module de tente central **100** en vue de côté.

Sur cette figure, on constate que le premier moyen de fixation **112**a s'étend selon une première surface **P1** qui est inclinée par rapport au plan vertical **V1**, l'angle d'inclinaison étant référencé α.

Dans l'exemple de la figure **5**, la première surface **P1** est une surface plane. Cependant, sans sortir du cadre de la présente invention, la première surface pourrait être légèrement incurvée ou bombée. Dans ce cas, le plan **P1** peut être vu comme celui qui contient le bord d'extrémité inférieur et le sommet de l'arche dans lequel s'étend le premier moyen de fixation.

Dans cet exemple non limitatif, l'angle α est de l'ordre de 20°.

En se référant à nouveau à la figure **1**, on constate que la toile de tente **104** comporte une première casquette **116** qui s'étend autour de la première ouverture **110**a tout en faisant saillie depuis la toile de tente **104** vers l'extérieur du module de tente central **100**.

Dans cet exemple, la casquette **116** est souple bien qu'elle pourrait tout à faire être constituée d'un matériau rigide.

La casquette **116** est constituée d'une portion supérieure **116**a qui s'étend dans un plan sensiblement horizontal et de portions latérales **116**b, **116**c qui flanquent l'ouverture **110**a.

On constate par ailleurs que le module de tente central **100** comporte une deuxième casquette **118** qui s'étend autour de la seconde ouverture **110**b, en faisant également saillie depuis la toile de tente **104** vers l'extérieur du module de tente central **100**.

Dans cet exemple, les casquettes **116** et **118** sont identiques de sorte qu'on ne s'intéressera dorénavant qu'à la première casquette **116**.

La première casquette **116** comporte en outre un bord périphérique **116**c qui s'étend autour de l'ouverture **110**a, ce bord périphérique **116**c étant muni d'un deuxième moyen de fixation **120**, en l'espèce une fermeture à glissières.

Ce second moyen de fixation **120**, tout comme le bord périphérique **116**c, s'étend également selon une courbe en forme d'arche. Cette courbe s'étend dans une seconde surface qui est inclinée par rapport au plan vertical précité.

Conformément à l'invention, l'inclinaison de la seconde surface est opposée à celle de la première surface. En d'autres termes, considérée depuis la base vers le sommet de l'arche, la seconde surface **P2** s'étend vers l'extérieur du module de tente central.

Sur la figure **5**, la seconde surface **P2** est plane. Sans sortir du cadre de la présente invention, elle pourrait toutefois être légèrement incurvée ou bombée. Dans ce cas, la référence **P2** correspondrait au plan moyen qui contient la base et le sommet de l'arche le long duquel s'étend le second moyen de fixation **120**.

Dans cet exemple, le premier moyen de fixation **112**a de la première face latérale **106**a présente la même longueur que le deuxième moyen de fixation **120**. Il s'agit ici d'une fermeture à glissière ;

alternativement, on pourrait prévoir des boucles de fixation montées le long du bord périphérique **116**c et du pourtour de l'ouverture.

En se référant à nouveau à la figure **5**, on constate que les première et seconde surfaces **P1**, **P2** sont sensiblement symétriques par rapport au plan vertical **V1**. Dans cet exemple, l'angle α entre le plan vertical **V1** et la surface **P1** est égal à l'angle **β** défini entre le plan vertical **V1** et la seconde surface **P2**.

Conformément à l'invention, le module de tente central **100** est configuré pour être attaché à au moins un module de tente complémentaire, quand bien même que le module de tente central pourrait être utilisé de manière autonome.

Sur les figures **5** et **6**, on a illustré un mode de réalisation de l'abri modulaire selon l'invention, dans lequel le module de tente central **100** est attaché à un module complémentaire d'un premier type **200**, à un module complémentaire d'un deuxième type **300**, et à un module complémentaire d'un troisième type **400,** qui vont être successivement décrits plus en détail ci-dessous.

La figure **6** illustre les modules une fois assemblés les uns aux autres afin de constituer l'abri modulaire **AM1**.

Dans l'exemple de la figure **6**, les modules de tente complémentaires sont attachés à deux faces latérales opposées du module de tente central **100**. Bien entendu, cet exemple n'est pas limitatif, les modules complémentaires pouvant coopérer avec l'une ou l'autre des faces latérales du module de tente central **100**.

On va maintenant décrire plus en détail le module de tente complémentaire du premier type **200**, à l'aide des figures **2A** et **2B**.

Le module complémentaire du premier type **200** comporte une toile de tente **202** qui est reliée à un boudin gonflable **204** présentant la forme d'un arceau. Le boudin formant arceau **204** délimite une ouverture **206** ménagée dans la face d'entrée **208** du module de tente complémentaire du premier type **200**. La face d'entrée **208** présente un contour périphérique **208**a qui est muni d'un dispositif de fixation **210**.

Dans cet exemple, le dispositif de fixation **210** est une fermeture à glissière.

Comme on le constate sur la figure **2B**, le dispositif de fixation **210** est disposé au dessus du boudin **204**. Le contour périphérique **208**a de la

face d'entrée **208** présente la forme d'une arche le long de laquelle s'étend la fermeture à glissière **210**.

En se référant à la figure **5**, on constate que le contour périphérique **208**a s'étend dans une surface **P3** qui est inclinée par rapport à un plan vertical **V2**.

Conformément à l'invention, la surface **P3** dans laquelle s'étend le contour périphérique **208**a présente la même inclinaison α que la seconde surface **P2** dans laquelle s'étend le bord périphérique **116**c de la casquette **116** du module de tente central **100**.

En d'autres termes, le dispositif de fixation **210** s'étend dans la surface **P3** qui présente la même inclinaison que la seconde surface **P2** du module de tente central **100**.

Comme on l'a représenté sur la figure **6**, lorsque le module de tente complémentaire du premier type **200** est attaché au module de tente central **100**, le dispositif de fixation **210** du module de tente complémentaire du premier type **200** est assemblé au deuxième moyen de fixation **120** du module de tente central **100**.

On comprend en effet que la surface dans laquelle s'étend le contour périphérique du premier module de tente complémentaire est parallèle à la seconde surface **P2** dans laquelle s'étend le bord périphérique de la casquette. Lorsque le module de tente complémentaire du premier type est attaché au module de tente central **100**, la surface **P3** dans laquelle s'étend le dispositif de fixation **210** se retrouve sensiblement confondue avec la surface **P2** dans laquelle s'étend le second dispositif de fixation **120** du module de tente central **100**, grâce à quoi le dispositif de fixation **210** et le deuxième moyen de fixation **120** peuvent être assemblés l'un à l'autre afin de connecter ensemble le module de tente du premier type et le module de tente central.

Dans cet exemple, la surface **P3** est donc inclinée d'un angle α par rapport au plan vertical **V2** de sorte que, considérée depuis la base vers le sommet du boudin **204**, la surface **P3** est inclinée vers l'intérieur du module de tente complémentaire du premier type **200**, étant rappelé que la seconde surface **P2** est quant à elle inclinée vers l'extérieur du module de tente central **100**.

On comprend par ailleurs que le dispositif de fixation **210** du module de tente complémentaire du premier type **200** est de même

longueur que le deuxième moyen de fixation **120** du module de tente central **100**.

Aussi, le module de tente complémentaire du premier type peut être notamment assemblé à n'importe laquelle des casquettes du module de tente central **100**.

En se référant maintenant aux figures **3**A et **3**B, on va décrire plus en détail le module de tente complémentaire du deuxième type **300**.

Ce module de tente complémentaire du deuxième type **300** est également configuré pour être attaché directement au module de tente central **100** ou à un module de tente complémentaire d'un autre type.

Le module de tente complémentaire du deuxième type **300** comporte également une toile de tente **302** mise en volume par le biais d'arceaux **304**, **306**, l'un des arceaux présentant une forme d'arche délimitant une face d'entrée **306** du module de tente complémentaire du deuxième type **300**.

Le module de tente complémentaire du deuxième type **300** est également pourvu d'une chambre intérieure **308** dont l'un des pans **308**a coïncide sensiblement avec la face d'entrée **306**. Ce pan **308**a est muni d'une ouverture **310** constituant une entrée du module de tente complémentaire du deuxième type **300**.

La face d'entrée **306** présente par ailleurs un contour périphérique **306**a qui est muni d'un dispositif de fixation **310**. Dans cet exemple, le dispositif de fixation **310** est une fermeture à glissière.

Ce contour périphérique **306**a ainsi que la fermeture à glissière **310** s'étendent dans une surface **P4** qui, comme on le constate sur la figure **5**, est inclinée et présente la même inclinaison α que la première surface **P1** dans laquelle s'étend le premier moyen de fixation **112**a du module de tente central **100**.

Comme on le voit sur la figure **6**, lorsque le module de tente complémentaire du deuxième type **300** est attaché au module de tente central **100**, la surface **P4** dans laquelle s'étend le dispositif de fixation **310** est parallèle à la première surface **P1** du module de tente central de manière à pouvoir assembler le dispositif de fixation **310** au premier moyen de fixation **112**a. La fixation directe du module de tente complémentaire du deuxième type **300** au module de tente central **100** est illustrée en figures **7** et **9**.

On constate que le contour périphérique vient se loger en dessous de la casquette du module de tente central **100**.

Par ailleurs, le dispositif de fixation **310** du module de tente complémentaire du deuxième type **300**, en l'espèce une fermeture à glissière, est de même longueur que la fermeture à glissière constituant le premier moyen de fixation **112**a du module de tente central **100**. On pourrait bien entendu remplacer les fermetures à glissières par des boucles d'attache sans sortir du cadre de la présente invention.

On va maintenant décrire plus en détail, le module de tente complémentaire du troisième type **400** à l'aide des figures **4**, **5**, **6**.

Comme on le constate notamment sur les figures **5** et **6**, le module de tente complémentaire du troisième type **400** illustré sur la figure **4** est configuré pour être attaché au module de tente central **100** ou à un module de tente complémentaire d'un autre type. Le module de tente complémentaire du troisième type **400** comporte une toile de tente **402** mise en volume par un premier arceau **404** qui délimite une première face d'entrée **406**. Cette première face d'entrée **406** présente un premier contour périphérique **406**a qui s'étend dans une troisième surface **P5,** laquelle est inclinée par rapport à un plan vertical **V4**, la troisième surface **P5** présentant la même inclinaison α que la première surface **P1** du module de tente central **100**.

Le premier dispositif de fixation **310** peut être assemblé de manière démontable au premier moyen de fixation **112**a du module de tente central. En conséquence, le premier dispositif de fixation **310** présente la même longueur que le premier moyen de fixation du module de tente central. En l'espèce, le premier dispositif de fixation du module de tente complémentaire du troisième type et le premier moyen de fixation du module de tente central sont des fermetures à glissières.

En se référant à nouveau à la figure **4**, on constate que le module de tente complémentaire du troisième type **400** comporte en outre une seconde face d'entrée **408** qui est opposée à la première face d'entrée **406**. Le module complémentaire du troisième type **400** comporte un boudin **410** formant arceau qui entoure la seconde face d'entrée **408**.

Le boudin **410** s'étend selon un second contour périphérique **408**a qui est muni d'un second dispositif de fixation **420**. Le second contour périphérique **408**a s'étend dans une quatrième surface **P6**, mieux visible

sur la figure **5**, qui est inclinée et parallèle à la troisième surface **P5**. Cette quatrième surface **P6** est donc inclinée d'un angle α par rapport au plan vertical **V5**.

En se référant à la figure **5**, on constate que la quatrième surface **P6**, considérée depuis la base vers le sommet du boudin **409**, s'étend vers l'intérieur du module de tente central du troisième type, tandis que la troisième surface **P5** s'étend vers l'extérieur dudit module.

En conséquence, le second dispositif de fixation **420** peut être assemblé de manière démontable au deuxième moyen de fixation **120** de la casquette du module de tente central **100**, grâce à quoi le module de tente complémentaire du troisième type **400** peut être attaché au module de tente central **100**.

On comprend également que le module de tente complémentaire du troisième type **400** peut être attaché au module de tente complémentaire du deuxième type **300** dans la mesure où la surface **P4** du module de tente complémentaire du deuxième type présente la même inclinaison que la quatrième surface inclinée du module de tente complémentaire du troisième type.

Cet agencement est notamment visible sur la figure **5**.

Les figures **7** à **10** présentent différents modes de réalisation de l'abri modulaire conforme à la présente invention.

L'abri modulaire **AM2** de la figure **7** comprend un module de tente central **100**, attaché directement par une première face latérale à un module de tente complémentaire du deuxième type et par une deuxième face latérale à un module complémentaire du premier type.

L'abri modulaire **AM3** du mode de réalisation de la figure **8** diffère du mode de réalisation de la figure **7** en ce qu'un premier module de tente complémentaire du troisième type **400** est inséré entre le module de tente complémentaire du deuxième type **300** et le module de tente central **100** ; et un second module de tente complémentaire du troisième type **400'** est inséré entre le module de tente central **100** et le module de tente complémentaire du premier type **200**.

L'abri modulaire **AM4** de la figure **9** comporte deux modules de tente centraux **100**, **100'** reliés l'un à l'autre par le biais d'un module de tente complémentaire du troisième type **400**. L'un des deux modules de tente centraux **100** est attaché à un module de tente central du deuxième

type **300**, tandis que l'autre des deux modules de tente centraux **100'** est attaché directement à un second module de tente complémentaire du troisième type **400'**, qui est lui-même attaché à un module de tente complémentaire du premier type **200**.

Dans le mode de réalisation **AM5** de la figure **10**, l'abri modulaire **AM5** comporte un module de tente complémentaire du premier type **200** et un module de tente complémentaire du deuxième type **300**, les modules de tente complémentaires des premier et deuxième types étant attachés l'un à l'autre sans module de tente central mais par le biais d'un module de tente complémentaire du troisième type **400**.

REVENDICATIONS

1. Module de tente central (100) comportant :
    - une toile de tente (104) dans laquelle est ménagée au moins une ouverture (106a, 106b), ladite ouverture étant munie d'un premier moyen de fixation (112a, 112b) et s'étendant dans une première surface (P1) inclinée par rapport à un plan vertical ;
    - au moins une casquette (116, 118) s'étendant autour de l'ouverture (106a, 106b) tout en faisant saillie depuis la toile de tente vers l'extérieur du module de tente central, la casquette présentant un bord périphérique (116c) muni d'un deuxième moyen de fixation (120) et s'étendant dans une seconde surface (P2) inclinée par rapport au plan vertical (V1), la seconde surface présentant, par rapport au plan vertical, une inclinaison opposée à celle de la première surface.

2. Module de tente central selon la revendication 1, caractérisé en ce qu'il comporte en outre un pan de porte (114) dont le pourtour comprend un organe de fixation (114a) arrangé pour coopérer avec le premier moyen de fixation (112a) de l'ouverture (110a) ou bien avec le deuxième moyen de fixation.

3. Module de tente central selon la revendication 1 ou 2, caractérisé en que les premier (112a) et deuxième (120) moyens de fixation présentent la même longueur.

4. Module de tente central selon l'une quelconque des revendications 1 à 3, caractérisé en ce que les premier (112a) et deuxième (120) moyens de fixation sont des fermetures à glissières.

5. Module de tente central selon l'une quelconque des revendications 1 à 3, caractérisé en ce que les premier (112a) et deuxième (120) moyens de fixation sont constitués de boucles de fixation.

6. Module de tente central selon l'une quelconque des revendications 1 à 5, caractérisé en ce que les première et seconde surfaces (P1, P2) sont sensiblement symétriques par rapport au plan vertical (V1).

7. Module de tente central selon l'une quelconque des revendications 1 à 6, caractérisé en ce que le bord périphérique de la casquette comporte en outre un rabat d'étanchéité recouvrant le deuxième moyen de fixation de la casquette.

8. Abri modulaire comportant au moins un module de tente central selon l'une quelconque des revendications 1 à 7, et au moins un module de tente complémentaire (200, 300, 400) configuré pour être attaché au module de tente central et/ou à un autre module de tente complémentaire (200, 300, 400).

9. Abri modulaire selon la revendication 8, caractérisé en ce qu'il comporte au moins un module de tente complémentaire d'un premier type (200) configuré pour être attaché au module de tente central (100) ou à un module de tente complémentaire d'un autre type (300, 400), en ce que le module de tente complémentaire du premier type comporte une face d'entrée (208) présentant un contour périphérique (208a) muni d'un dispositif de fixation (210), le contour périphérique s'étendant dans une surface (P3) qui est inclinée par rapport à un plan vertical (V2), en ce que la surface dans laquelle s'étend le contour périphérique du module de tente complémentaire du premier type présente la même inclinaison (α) que la seconde surface (P2) dans laquelle s'étend le bord périphérique (116c) de la casquette (116) du module de tente central (100), et en ce que, lorsque le module de tente complémentaire du premier type (200) est attaché au module de tente central (100), le dispositif de fixation (210) du module de tente complémentaire du premier type (200) est assemblé au deuxième moyen de fixation (120) du module de tente central (100).

10. Abri modulaire selon la revendication 9, caractérisé en ce que le dispositif de fixation (210) du module de tente complémentaire du premier type (200) est de même longueur que le deuxième moyen de fixation (120) du module de tente central (100).

11. Abri modulaire selon la revendication 9 ou 10, caractérisé en ce que le dispositif de fixation du module de tente complémentaire du premier type (200) et le deuxième moyen de fixation du module de tente central (100) sont des fermetures à glissières.

12. Abri modulaire selon la revendication 9 ou 10, caractérisé en ce que le dispositif de fixation du module de tente complémentaire du premier type (200) et le deuxième moyen de fixation du module de tente central (100) sont constitués de boucles d'attaches.

13. Abri modulaire selon l'une quelconque des revendications 9 à 12, caractérisé en ce que le module de tente complémentaire du premier type comporte un boudin formant arceau (204) qui entoure la face d'entrée (208), le dispositif de fixation (210) étant disposé au-dessus du boudin (204).

14. Abri modulaire selon l'une quelconque des revendications 9 à 13, caractérisé en ce qu'il comporte au moins un module de tente complémentaire d'un deuxième type (300) configuré pour être attaché au module de tente central (100) ou à un module de tente complémentaire d'un autre type (200, 400), en ce que le module de tente complémentaire du deuxième type comporte une face d'entrée (306) présentant un contour périphérique (306a) muni d'un dispositif de fixation (310), le contour périphérique s'étendant dans une surface (P4) qui présente la même inclinaison (α) que la première surface (P1) dans laquelle s'étend le premier moyen de fixation (112a) du module de tente central (100), et en ce que, lorsque le module de tente complémentaire du deuxième type (300) est attaché au module de tente central (100), le dispositif de fixation (310) est assemblé au premier moyen de fixation (112a), et

le contour périphérique (306a) vient se loger en dessous de la casquette (116).

15. Abri modulaire selon la revendication 14, caractérisé en ce que le dispositif de fixation (310) du module de tente complémentaire du deuxième type (300) est de même longueur que le premier moyen de fixation du module de tente central (100).

16. Abri modulaire selon la revendication 14 ou 15, caractérisé en ce que le dispositif de fixation du module de tente complémentaire du deuxième type (300) et le premier moyen de fixation du module de tente central (100) sont des fermetures à glissières.

17. Abri modulaire selon la revendication 14 ou 15, caractérisé en ce que le dispositif de fixation du module de tente complémentaire du deuxième type (300) et le premier moyen de fixation du module de tente central (100) sont constitués de boucles d'attaches.

18. Abri modulaire selon l'une quelconque des revendications 8 à 17, caractérisé en ce qu'il comporte au moins un module de tente complémentaire d'un troisième type (400) configuré pour être attaché au module de tente central et/ou à un module de tente complémentaire d'un autre type (200, 300), en ce que le module de tente complémentaire du troisième type comporte une première face d'entrée (406) présentant un premier contour périphérique muni d'un premier dispositif de fixation, le premier contour périphérique s'étendant dans une troisième surface inclinée par rapport à un plan vertical et qui présente la même inclinaison (α) que la première surface (P1) du module de tente central (100), en ce que le premier dispositif de fixation (410) peut être assemblé de manière démontable au premier moyen de fixation (112a) du module de tente central (100), en ce que le module de tente complémentaire du troisième type (400) comporte en outre une seconde face d'entrée (407), opposée à la première face d'entrée (406), présentant un second contour périphérique (408a) muni d'un second dispositif de fixation (420), le second contour périphérique

(408a) s'étendant dans une quatrième surface qui est parallèle à la troisième surface, en ce que le second dispositif de fixation (420) peut être assemblé de manière démontable au deuxième moyen de fixation (120), grâce à quoi le module de tente complémentaire du troisième type (400) peut être attaché au module de tente central (100) et/ou à un module de tente complémentaire d'un autre type par l'intermédiaire de son premier dispositif de fixation ou de son second dispositif de fixation.

19. Abri modulaire selon la revendication 18, caractérisé en ce que les premier (410) et second (420) dispositifs de fixation présentent respectivement la même longueur que les premier (112a) et deuxième (120) moyens de fixation du module de tente central.

20. Abri modulaire selon la revendication 18 ou 19, caractérisé en ce que les premier et second dispositifs de fixation sont des fermetures à glissières.

21. Abri modulaire selon la revendication 18 ou 19, caractérisé en ce que les premier et second dispositifs de fixation sont constitués de boucles d'attaches.

22. Abri modulaire selon l'une quelconque des revendications 18 à 21, caractérisé en ce que le module de tente complémentaire du troisième type (400) comporte un boudin formant arceau (409) qui entoure la seconde face d'entrée (408), et en ce que le deuxième dispositif de fixation est disposé au-dessus dudit boudin.

23. Abri modulaire (AM4) selon l'une quelconque des revendications 18 à 22, caractérisé en ce qu'il comporte deux modules de tente centraux (100, 100') reliés l'un à l'autre par le biais d'un module de tente complémentaire du troisième type (400).

24. Abri modulaire (AM5) selon les revendications 9 et 14, caractérisé en ce qu'il comporte un module de tente complémentaire du premier type (200) et un module de tente complémentaire du deuxième type (300), les modules de tente complémentaires des

premier et deuxième types étant attachés l'un à l'autre sans module de tente central.

25. Abri modulaire (AM5) selon les revendications 18 et 24, caractérisé en ce qu'il comporte en outre un module de tente complémentaire du troisième type (400) disposé entre le module de tente complémentaire du premier type et le module de tente complémentaire du deuxième type.

26. Module de tente complémentaire d'un premier type (200) configuré pour être attaché à un module de tente central (100) selon l'une quelconque des revendications 1 à 7 ou à un module de tente complémentaire d'un autre type (300, 400), caractérisé en ce que ledit module de tente complémentaire du premier type comporte une face d'entrée (208) présentant un contour périphérique (208a) muni d'un dispositif de fixation (210), le contour périphérique s'étendant dans une surface (P3) qui est inclinée par rapport à un plan vertical (V2), en ce que la surface dans laquelle s'étend le contour périphérique du module de tente complémentaire du premier type présente la même inclinaison (α) que la seconde surface (P2) dans laquelle s'étend le bord périphérique (116c) de la casquette (116) du module de tente central (100), et en ce que, lorsque le module de tente complémentaire du premier type (200) est attaché au module de tente central (100), le dispositif de fixation (210) du module de tente complémentaire du premier type (200) est assemblé au deuxième moyen de fixation (120) du module de tente central (100).

27. Module de tente complémentaire d'un deuxième type (300) configuré pour être attaché à un module de tente central (100) selon l'une quelconque des revendications 1 à 7, ou à un module de tente complémentaire d'un autre type (200, 400), caractérisé en ce que le module de tente complémentaire du deuxième type comporte une face d'entrée (306) présentant un contour périphérique (306a) muni d'un dispositif de fixation (310), le contour périphérique s'étendant dans une surface inclinée (P4) qui

présente la même inclinaison (α) que la première surface (P1) dans laquelle s'étend le premier moyen de fixation (112a) du module de tente central (100), et en ce que, lorsque le module de tente complémentaire du deuxième type (300) est attaché au module de tente central (100), le dispositif de fixation (310) est assemblé au premier moyen de fixation (112a), et le contour périphérique (306a) vient se loger en dessous de la casquette (116).

28. Module de tente complémentaire d'un troisième type (400) configuré pour être attaché à un module de tente central selon l'une quelconque des revendications 1 à 7, et/ou à un module de tente complémentaire d'un autre type (200, 300), caractérisé en ce que le module de tente complémentaire du troisième type comporte une première face d'entrée (406) présentant un premier contour périphérique muni d'un premier dispositif de fixation, le premier contour périphérique s'étendant dans une troisième surface inclinée par rapport à un plan vertical et qui présente la même inclinaison (α) que la première surface (P1) du module de tente central (100), en ce que le premier dispositif de fixation (410) peut être assemblé de manière démontable au premier moyen de fixation (112a) du module de tente central (100), en ce que le module de tente complémentaire du troisième type (400) comporte en outre une seconde face d'entrée (407), opposée à la première face d'entrée (406), présentant un second contour périphérique (408a) muni d'un second dispositif de fixation (420), le second contour périphérique (408a) s'étendant dans une quatrième surface qui est parallèle à la troisième surface, en ce que le second dispositif de fixation (420) peut être assemblé de manière démontable au deuxième moyen de fixation (120), grâce à quoi le module de tente complémentaire du troisième type (400) peut être attaché au module de tente central (100) et/ou à un module de tente complémentaire d'un autre type par l'intermédiaire de son premier dispositif de fixation ou de son second dispositif de fixation.

29. Ensemble modulaire (AM5) comportant un module de tente complémentaire du premier type (200) selon la revendication 26 et

un module de tente complémentaire du deuxième type (300) selon la revendication 27, le module de tente complémentaire du premier type étant attaché au module de tente complémentaire du deuxième type.

30. Ensemble modulaire (AM5) selon la revendication 29, caractérisé en ce qu'il comporte en outre un module de tente complémentaire du troisième type (400) selon la revendication 28 reliant le module de tente complémentaire du premier type au module de tente complémentaire du deuxième type.

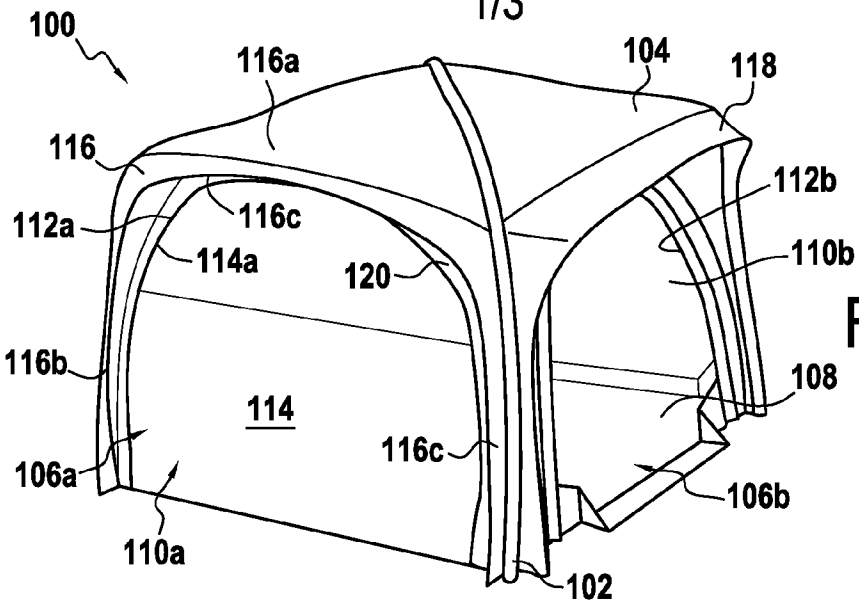


FIG.1

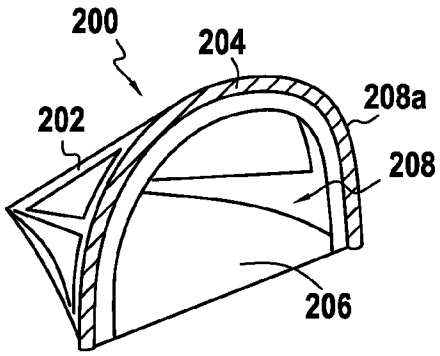


FIG.2A

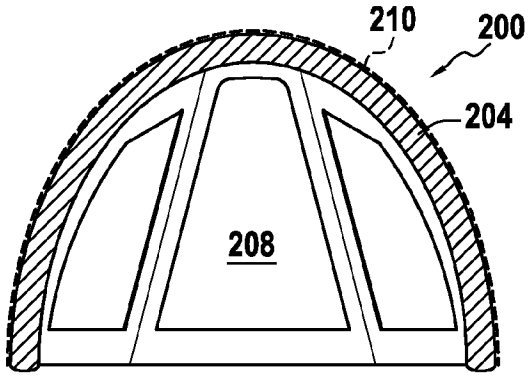


FIG.2B

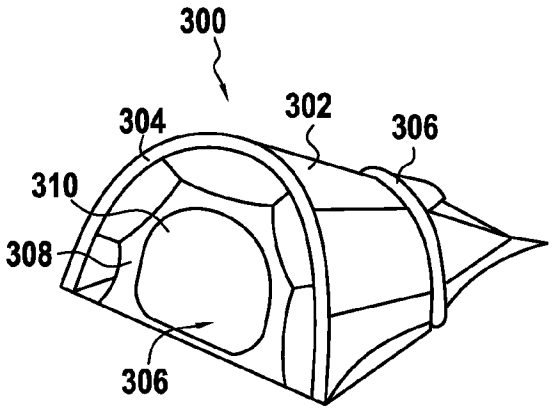


FIG.3A

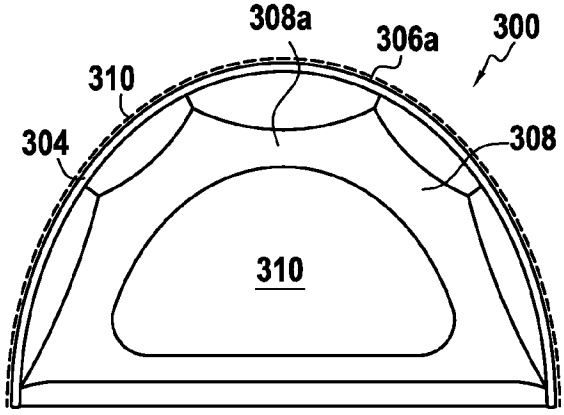


FIG.3B

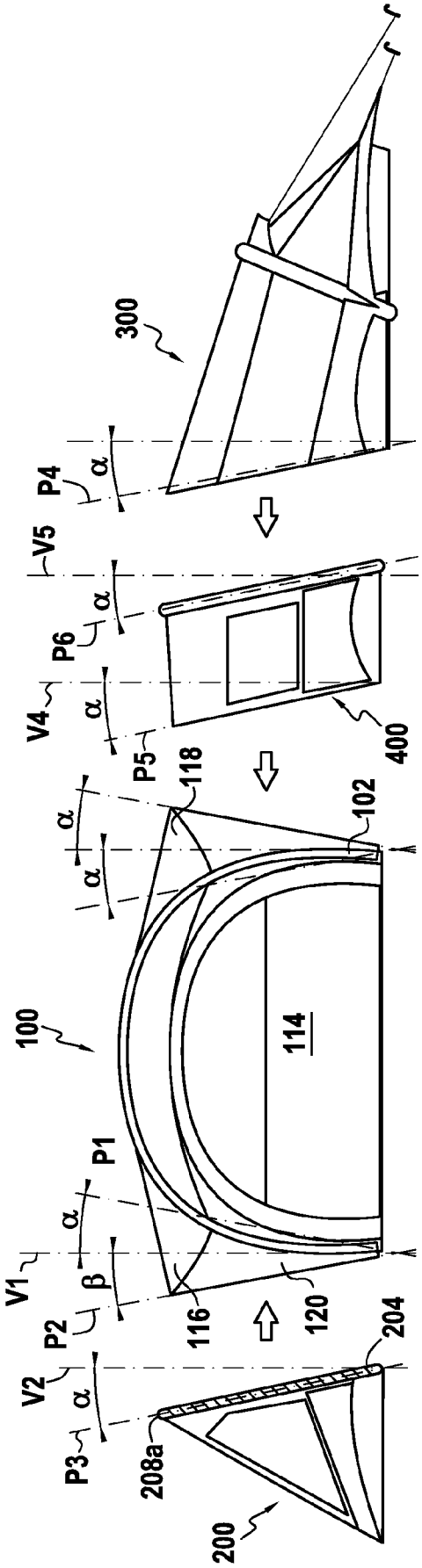


FIG.5

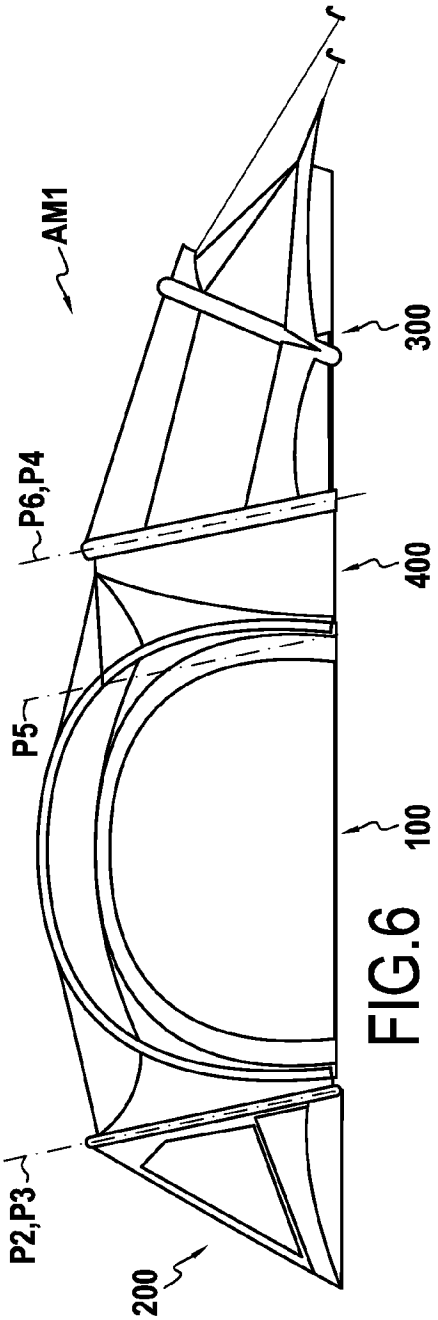


FIG.6

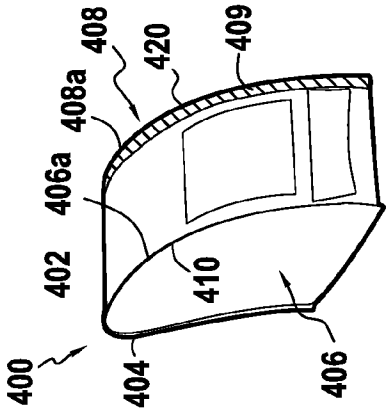


FIG.4

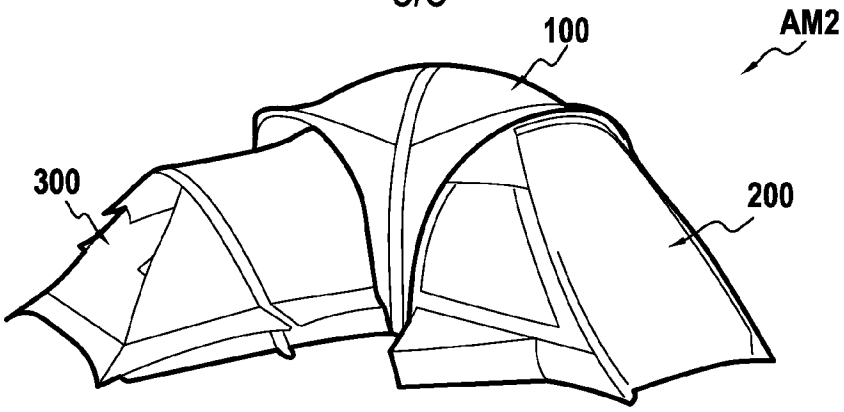


FIG.7

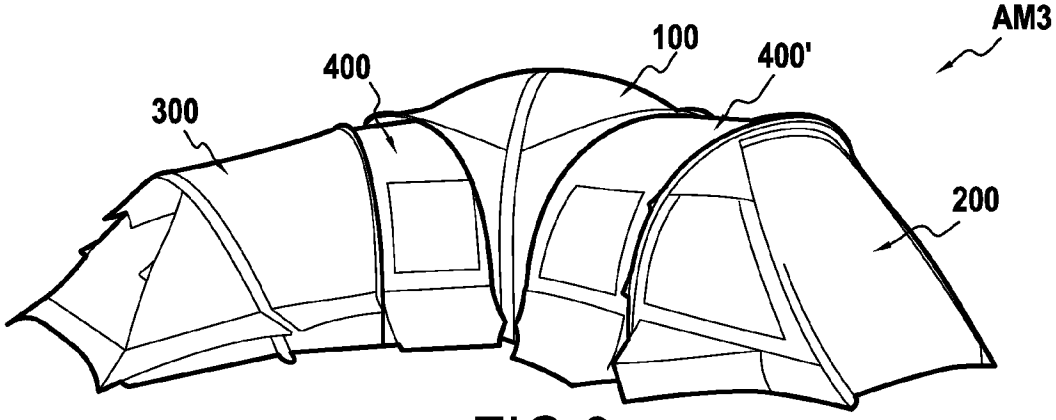


FIG.8

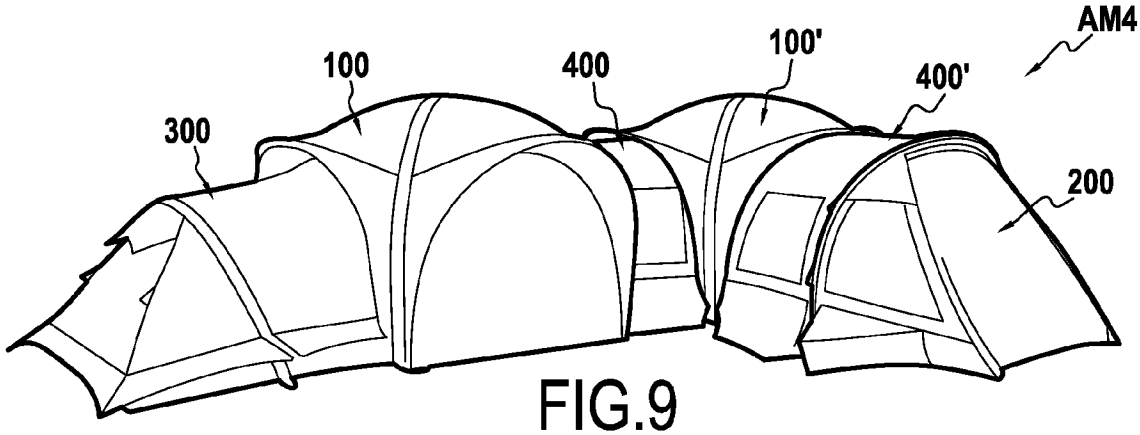


FIG.9

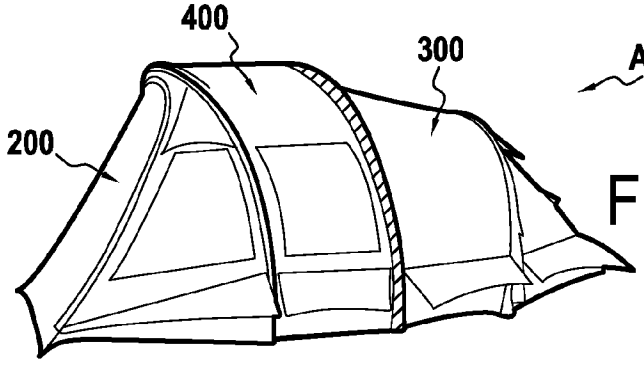


FIG.10

RÉPUBLIQUE FRANÇAISE

INSTITUT NATIONAL DE LA PROPRIÉTÉ INDUSTRIELLE

RAPPORT DE RECHERCHE PRÉLIMINAIRE

établi sur la base des dernières revendications déposées avant le commencement de la recherche

N° d'enregistrement national

FA 775157
FR 1260857

DOCUMENTS CONSIDÉRÉS COMME PERTINENTS

Catégorie	Citation du document avec indication, en cas de besoin, des parties pertinentes	Revendication(s) concernée(s)	Classement attribué à l'invention par l'INPI
A	US 2004/238021 A1 (HOLUB TIMOTHY M [US] ET AL) 2 décembre 2004 (2004-12-02) * alinéas [0002], [0006], [0008], [0034], [0045], [0047], [0049], [0054] - [0060]; figures 2,4,8-10 *	1-30	E04H15/18
A	US 5 394 897 A (RITCHEY MICHAEL T [US] ET AL) 7 mars 1995 (1995-03-07) * figures 1-6 *	1-30	
A	WO 2011/018664 A1 (TOLAND DUSTIN [GB]) 17 février 2011 (2011-02-17) * figures 1,9,10,11 *	1-30	

DOMAINES TECHNIQUES RECHERCHÉS (IPC)

E04H

Date d'achèvement de la recherche	Examinateur
29 juillet 2013	Decker, Robert

CATÉGORIE DES DOCUMENTS CITÉS

X : particulièrement pertinent à lui seul
Y : particulièrement pertinent en combinaison avec un autre document de la même catégorie
A : arrière-plan technologique
O : divulgation non-écrite
P : document intercalaire

T : théorie ou principe à la base de l'invention
E : document de brevet bénéficiant d'une date antérieure à la date de dépôt et qui n'a été publié qu'à cette date de dépôt ou qu'à une date postérieure.
D : cité dans la demande
L : cité pour d'autres raisons

& : membre de la même famille, document correspondant

1

EPO FORM 1503 12.99 (P04C14)

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Case No. PGR2024-00033; Exhibit 1002

ANNEXE AU RAPPORT DE RECHERCHE PRÉLIMINAIRE
RELATIF A LA DEMANDE DE BREVET FRANÇAIS NO. FR 1260857 FA 775157

La présente annexe indique les membres de la famille de brevets relatifs aux documents brevets cités dans le rapport de recherche préliminaire visé ci-dessus.
Les dits membres sont contenus au fichier informatique de l'Office européen des brevets à la date du 29-07-2013
Les renseignements fournis sont donnés à titre indicatif et n'engagent pas la responsabilité de l'Office européen des brevets, ni de l'Administration française

Document brevet cité au rapport de recherche	Date de publication	Membre(s) de la famille de brevet(s)	Date de publication
US 2004238021 A1	02-12-2004	US 2004238021 A1	02-12-2004
		US 2007295377 A1	27-12-2007
US 5394897 A	07-03-1995	AUCUN	
WO 2011018664 A1	17-02-2011	EP 2464803 A1	20-06-2012
		WO 2011018664 A1	17-02-2011

EPO FORM P0465

Pour tout renseignement concernant cette annexe : voir Journal Officiel de l'Office européen des brevets, No.12/82

Camel Manufacturing Company, LLC,
Case No. PGR2024-00033; Exhibit 1002

DERWENT-ACC-NO: 2014-J30345

DERWENT-WEEK: 201676

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TITLE: Central tent module for use in modular shelter of modular assembly, has cover including peripheral edge provided with fixing unit and extending over surface inclined relative to vertical plane in opposite direction to another surface

INVENTOR: LAFOUX B; SIMON B

PATENT-ASSIGNEE: DECATHLON[DECA] , DECATHLON SA[DECA] , PROMILES[PROMN]

PRIORITY-DATA: 2012FR-060857 (November 15, 2012)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE
FR 2997984 A1	May 16, 2014	FR
WO 2014076384 A1	May 22, 2014	FR
FR 2997984 B1	January 16, 2015	FR
CN 104781487 A	July 15, 2015	ZH
EP 2920386 A1	September 23, 2015	FR
RU 2602855 C1	November 20, 2016	RU

DESIGNATED-STATES: AE AG AL AM AO AT AU AZ BA BB BG BH BN BR BW BY BZ CA CH CL CN CO CR CU CZ DE DK DM DO DZ EC EE EG ES FI GB GD GE GH GM GT HN HR HU ID IL IN IR IS JP KE KG KN KP KR KZ LA LC LK LR LS LT LU LY MA MD ME MG MK MN MW MX MY MZ NA NG NI NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SK SL SM ST SV SY TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW AL AT BE BG CH CY CZ DE DK EE

ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK
MT NL NO PL PT RO RS SE SI SK SM TR BA ME

APPLICATION-DATA:

PUB-NO	APPL-DESCRIPTOR	APPL-NO	APPL-DATE
FR 2997984A1	N/A	2012FR-060857	November 15, 2012
FR 2997984B1	N/A	2012FR-060857	November 15, 2012
CN 104781487A	N/A	2013CN-80059839	October 25, 2013
EP 2920386A1	N/A	2013EP-815013	October 25, 2013
WO2014076384A1	N/A	2013WO-FR052549	October 25, 2013
CN 104781487A	PCT Application	2013WO-FR052549	October 25, 2013
EP 2920386A1	PCT Application	2013WO-FR052549	October 25, 2013
RU 2602855C1	PCT Application	2013WO-FR052549	October 25, 2013
RU 2602855C1	Based on	2015RU-122486	October 25, 2013

CPC-CURRENT:

CPC-INVENTIVE:

TYPE	CPC	DATE
CPCI	E04H15/18	20130101
CPCI	E04H15/40	20130101

INT-CL-CURRENT:

TYPE	IPC	DATE
CIPP	E04H15/18	20060101
CIPS	E04H15/40	20060101

ABSTRACTED-PUB-NO: FR 2997984 A1

BASIC-ABSTRACT:

NOVELTY - The module (100) has a tent canvas, in which openings are formed. The openings are provided with fixing units e.g. fixing loops, and extend over a surface (P1) i.e. flat surface, inclined relative to a vertical plane (V1). Covers (116, 118) extend around the openings and project from the canvas towards outside of the module. One of the covers (116) has a peripheral edge provided with another fixing unit (120) and extending over another surface (P2) i.e. planar surface, inclined relative to the vertical plane in an opposite direction to the former surface.

DESCRIPTION - An INDEPENDENT CLAIM is also included for a modular shelter.

USE - Central tent module for use in a modular shelter of a modular assembly (all claimed).

ADVANTAGE - The module provides the module assembly with a high modularity by providing large combinations or configurations of the assembly.

DESCRIPTION OF DRAWING(S) - The drawing shows a perspective view of a modular shelter including a central tent module and complementary tent modules of three types before assembly.

Surfaces (P1, P2)

Vertical plane (V1)

Central tent module (100)

Cross arches (102)

Covers (116, 118)

Fixing unit (120)

CHOSEN-DRAWING: Dwg.5/10

TITLE-TERMS: CENTRAL TENT MODULE SHELTER ASSEMBLE COVER PERIPHERAL EDGE FIX UNIT EXTEND SURFACE INCLINE RELATIVE VERTICAL PLANE OPPOSED DIRECTION

DERWENT-CLASS: Q46

Electronic Acknowledgement Receipt

EFS ID:	46732135
Application Number:	17886132
International Application Number:	
Confirmation Number:	8474
Title of Invention:	SHELTER AND HUB SYSTEM
First Named Inventor/Applicant Name:	Jonathan Urhausen
Customer Number:	4678
Filer:	Kelly B. Robinson/Nichol Neal
Filer Authorized By:	Kelly B. Robinson
Attorney Docket Number:	9693-012A-CONB
Receipt Date:	30-SEP-2022
Filing Date:	11-AUG-2022
Time Stamp:	14:10:54
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	9693-012A-CONB_IDS_transmittal.pdf	69203 8c586b22b12a5c4c5be08039fe9a18f9dba36e89	no	1

Warnings:

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Case No. PGR2024-00033; Exhibit 1002

Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	9693-012A-CONB_SB-08.pdf	614614 efdf0feaf13074ae4399121b1221b02926af3c2f	no	11
Warnings:					
Information:					
3	Foreign Reference	CA-2837116.pdf	1366074 d6d1e405848d0f8d3dfe7112557fee4ec83a42bb	no	38
Warnings:					
Information:					
4	Foreign Reference	DE-29510827.pdf	417860 c6820396df684adcf11901ae8726c652c05808e0	no	13
Warnings:					
Information:					
5	Foreign Reference	DE-29517290.pdf	705781 8385f7bb3622f002a5258d654c419d39625bd679	no	20
Warnings:					
Information:					
6	Foreign Reference	DE-29716289.pdf	709767 058290189e93fadc9db67e6be36062b99889772b	no	20
Warnings:					
Information:					
7	Foreign Reference	FR-2705718.pdf	877193 42f01c244d870c83b3fe90b843109db4429c3059	no	23
Warnings:					
Information:					
8	Letter specifying the conditions for filing under 37 CFR 1.97	FR-2997984.pdf	1459409 da393fe830e4f613f911597df3df7f34cd62cd3e	no	38
Warnings:					
Information:					
		Total Files Size (in bytes):	6219901		

Camel Manufacturing Company, LLC,
Case No. PGR2024-00033; Exhibit 1002

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application: DLX Enterprises, LLC
Serial No.: 17/886,132
Filed: August 11, 2022
Confirmation No.: 8474
For: SHELTER AND HUB SYSTEM

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

INFORMATION DISCLOSURE STATEMENT

In accordance with 37 C.F.R. 1.56, counsel wishes to make of record the items of information on the Form PTO/SB/08a for the Examiner's consideration in connection with this application. Inclusion herein of any particular item of information is not to be construed as an admission that same is prior art.

Respectfully submitted,

/Kelly B. Robinson/

Kelly B. Robinson
Reg. No. 72,960
MacCord Mason PLLC
2733 Horse Pen Creek Road, Suite 101
Greensboro, NC 27410

Date: September 30, 2022
File No.: 9693-012A-CONB

Camel Manufacturing Company, LLC,
Case No. PGR2024-00033; Exhibit 1002

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 17/886,132

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	80		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	350		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	400		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	20 minus 20 =	*	x 50 =	0.00	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 =	*	x 240 =	0.00			
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			0.00			
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				0.00			
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	830		TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)		RATE($)	ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
17/886,132	08/11/2022	3636	830	9693-012A-CONB	20	3

CONFIRMATION NO. 8474

4678
MACCORD MASON PLLC
2733 Horse Pen Creek Road, Suite 101
GREENSBORO, NC 27410

FILING RECEIPT

OC000000136016979

Date Mailed: 08/25/2022

Receipt is acknowledged of this non-provisional utility patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF FIRST INVENTOR, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection.

Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please submit a written request for a corrected Filing Receipt, including a properly marked-up ADS showing the changes with strike-through for deletions and underlining for additions. If you received a "Notice to File Missing Parts" or other Notice requiring a response for this application, please submit any request for correction to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections provided that the request is grantable.

Inventor(s)

Jonathan Urhausen, Eugene, OR;
Adam Barr, Eugene, OR;
Donald Bierman, Eugene, OR;

Applicant(s)

DLX Enterprises, LLC, Eugene, OR;

Assignment For Published Patent Application

DLX Enterprises, LLC, Eugene, OR

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a CON of 17/677,210 02/22/2022
which is a CON of 16/861,012 04/28/2020 PAT 11280107
which is a CIP of 16/431,322 06/04/2019 PAT 10941559
which is a CON of 15/639,261 06/30/2017 PAT 10309093
which claims benefit of 62/356,793 06/30/2016

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

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Case No. PGR2024-00033; Exhibit 1002

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 08/23/2022

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 17/886,132**

Projected Publication Date: Request for Non-Publication Acknowledged

Non-Publication Request: Yes

Early Publication Request: No

**** SMALL ENTITY ****

Title

SHELTER AND HUB SYSTEM

Preliminary Class

135

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

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Case No. PGR2024-00033; Exhibit 1002

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

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This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

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Camel Manufacturing Company, LLC,
Case No. PGR2024-00033; Exhibit 1002

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Case No. PGR2024-00033; Exhibit 1002

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	9693-012A-CONB
	Application Number	
Title of Invention	SHELTER AND HUB SYSTEM	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

Secrecy Order 37 CFR 5.2:

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Jonathan		Urhausen	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

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Mailing Address of Inventor:

Address 1	1075 Arrowsmith Rd.		
Address 2			
City	Eugene	State/Province	OR
Postal Code	97402	Country i	US

Inventor 2

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Adam		Barr	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

City	Eugene	State/Province	OR	Country of Residence i	US

Mailing Address of Inventor:

Address 1	1075 Arrowsmith Rd.		
Address 2			
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Inventor 3

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Donald		Bierman	

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	9693-012A-CONB
	Application Number	
Title of Invention	SHELTER AND HUB SYSTEM	

Residence Information (Select One)	◉ US Residency	○ Non US Residency	○ Active US Military Service

City	Eugene	**State/Province**	OR	**Country of Residence** i	US

Mailing Address of Inventor:

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Postal Code	97402	**Country** i	US

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence Information of this application.**

Customer Number	4678		
Email Address	docketing@maccordmason.com	Add Email	Remove Email

Application Information:

Title of the Invention	SHELTER AND HUB SYSTEM		
Attorney Docket Number	9693-012A-CONB	**Small Entity Status Claimed**	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	31	**Suggested Figure for Publication (if any)**	

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country i

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	Application Number	
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Publication Information:

☐	Request Early Publication (Fee required at time of Request 37 CFR 1.219)
☒	**Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	◉ Customer Number	○ US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number	04678		

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Registration Number					
Prefix	**Given Name**	Middle Name	**Family Name**	Suffix	Remove
Registration Number					

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Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.
When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
	Continuation of	17/677210	2022-02-22

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Title of Invention	SHELTER AND HUB SYSTEM	

Prior Application Status	Patented			Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
17/677210	Continuation of	16/861012	2020-04-28	11280107	2022-03-22

Prior Application Status	Patented			Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
16/861012	Continuation in part of	16/431322	2019-06-04	10941559	2021-03-09

Prior Application Status	Patented			Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
16/431322	Continuation of	15/639261	2017-06-30	10309093	2019-06-04

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
15/639261	Claims benefit of provisional	62/356793	2016-06-30

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button.

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX) the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button.

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

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	Application Number	
Title of Invention	SHELTER AND HUB SYSTEM	

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

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	Application Number	
Title of Invention	SHELTER AND HUB SYSTEM	

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	9693-012A-CONB
	Application Number	
Title of Invention	SHELTER AND HUB SYSTEM	

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant 1

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

◉ Assignee	○ Legal Representative under 35 U.S.C. 117	○ Joint Inventor
○ Person to whom the inventor is obligated to assign.	○ Person who shows sufficient proprietary interest	

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor:	

If the Applicant is an Organization check here. ☒

Organization Name	DLX Enterprises, LLC

Mailing Address Information For Applicant:

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Address 2			
City	Eugene	**State/Province**	OR
Country[i]	US	Postal Code	97402
Phone Number		Fax Number	
Email Address			

Additional Applicant Data may be generated within this form by selecting the Add button.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	9693-012A-CONB
	Application Number	
Title of Invention	SHELTER AND HUB SYSTEM	

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

If the Assignee or Non-Applicant Assignee is an Organization check here. ☒

Organization Name	DLX Enterprises, LLC

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1	1075 Arrowsmith Rd.		
Address 2			
City	Eugene	**State/Province**	OR
Country i	US	Postal Code	97402
Phone Number		Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	9693-012A-CONB
	Application Number	
Title of Invention	SHELTER AND HUB SYSTEM	

Signature:

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). **However, if this Application Data Sheet is submitted with the INITIAL filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).**

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e. g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Kelly B. Robinson/			Date (YYYY-MM-DD)	
First Name	Kelly B.	Last Name	Robinson	Registration Number	72960

Additional Signature may be generated within this form by selecting the Add button.

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SHELTER AND HUB SYSTEM

Field of the Technology

The present disclosure relates generally to shelters, shelter systems, hub systems for shelters, hub shelters, and more particularly to an improved shelter system, apparatus, kit and methods, for example, for deployable shelter assemblies.

Background

Deployable shelters, tents, rapid-deployment shelters, forts and the like typically include sheets of fabric, or other materials, secured to a frame. Often these units are free-standing or are similarly semi-attached to a ground surface or tangential fixture. In some instances, guy ropes help anchor the unit to a ground surface once the shelter is assembled. Rapid deployment and assembly of such a shelter is often a difficult and demanding task, particularly during emergency situations and in uncertain environmental conditions.

For instance, rapid tactical shelters are used in a variety of demanding on-site scenarios including fire, incident command, communication areas, crime scene investigation, vaccination, military deployment, temporary hospital, and other on-site emergency response spots in a variety of challenging terrains, and environmental conditions. Rapid deployment, with quick and easy set-up and take-down of such units is often beneficial, if not necessary. Deployment situations may be, for example, in extreme heat or cold, during on-going emergencies and in remote locations, making ease of assembly extremely important and transportation of weighted items impractical. Durability of items in such terrain and environmental situations can also be a challenge. Incremental changes to weight, cost, ease of assembly and durability of deployable shelters and related shelter systems can result in large improvements in the field.

Therefore, Applicants desire improved systems, kits, assemblies, apparatus and methods for shelters and hub systems for deployment shelters and it is toward these and other challenges the present disclosure is directed.

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Summary

In accordance with the present disclosure, hub systems for assembly of a shelter frame, and improved shelter systems and assemblies are provided for deployment shelters, shelter hubs, and shelter assemblies and the like. This disclosure provides an improved shelter and shelter hub system that is convenient, efficient, easily portable, reliable, durable, and quick for the user, particularly when used in conjunction with other shelter accessories often used in deployment shelters, for example HVAC, lighting, power cords, interior insulation, etc.

In one embodiment of the present disclosure, a hub for assembly of a shelter may include at least one receiver slot, a receiver sleeve, and at least one attachment point.

Other embodiments may be considered a hub for assembly of a rapid-deployment shelter. The hub may include, in some examples, a set of receiver slots, a receiver sleeve and a set of attachment projections. The receiver slot may include two parallel slot walls, a slot floor and a center slot wall. The receiver sleeve may be medially positioned to the receiver slots. The set of attachment projections may be rounded or may take on other shapes. The set of attachment projections may be attached at each end to a slot wall.

In some embodiments, a receiver sleeve may include an inner receiver and an outer receiver. The inner receiver and outer receiver may form a pressure lock system. The inner receiver and outer receiver walls may be angled. The angle may, for example, be between about .001 and 1 degrees, or is contemplated to also be more. In some examples, the taper may be at .5 degrees. The inner receiver may be angled inwardly from the floor. The outer receiver may be angled outwardly from the floor. In some examples, the taper of the angle of the outer receiver may be opposite that of the taper of the angle of the inner receiver.

Some examples of frame and hub assemblies include a set of hubs and a set of frame poles. In some examples, the frame and hub assembly may include variations of the hub, for example, partial hubs, by way of example, for corners of the frame assembly. Embodiments may include methods for assembly of the frame and hub assembly in which the frame poles are connected through the hubs. In some examples, a hub may be

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placed and oriented top down, bottom down and/or on a hub side to form the frame and hub assembly. There may be a portion of the hubs horizontally oriented in connecting the hubs and a portion of the hubs vertically oriented in the frame and hub assembly. There may be partial hubs included in the frame and hub assembly. Partial hubs may be specialized to accept frame poles in hard to fit positions, for example, in frame and hub assembly corners and/or long frame pole articulations.

In still other examples, the inventions of the present disclosure may be considered a frame for an emergency, rapid-deployment shelter system. The frame may include a set of hubs and a set of frame poles, a portion of the frame poles secured with a portion of the hubs to form a skeleton frame for a rapid-deployment shelter system. The rapid-deployment shelter system may include more than one shelter.

The rapid-deployment shelter system may include more than one shelter mated with other rapid-deployment shelters. A shelter hub may interconnect more than one rapid-deployment shelter.

Other embodiments may be considered a shelter system including a frame, a cover and at least one hub. The frame may include a plurality of interconnected frame poles. The frame poles may be configured to alternate between a first extended position and a second retracted position. The cover may be configured to mate with the frame and/or be secured to the frame. The hub may include a set of receiver slots, a receiver sleeve, and a set of attachment projections.

Some embodiments may include a frame, a shelter, a shelter cover, and shelter accessories.

In other examples the inventions disclosed may be considered hub and shelter methods, for example a method for a hub, a method for a shelter system kit, a method for an improved shelter and a method for rapid deployment of a shelter according to the disclosure.

The above summary was intended to summarize certain embodiments of the present disclosure. Embodiments will be set forth in more detail in the figures and description of embodiments below. It will be apparent, however, that the description of

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embodiments is not intended to limit the inventions of the present disclosure, the scope of which should be properly determined by the appended claims.

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Brief Description of the Drawings

Embodiments of the disclosure will be better understood by a reading of the Description of Embodiments along with a review of the drawings, in which:

Figure 1 is a side perspective view of one example of a hub for a deployment shelter according to an embodiment of the disclosure;

Figure 2 is a front view of a one example of a deployment shelter with a hub system according to an embodiment of the disclosure;

Figure 3 is a top view of one example of a hub according to the present disclosure;

Figure 4 is a top view of one example of a hub according to the embodiment of Figure 1;

Figure 5 is an exploded view of one example of a shelter according to the present disclosure;

Figure 6 is another example of a bottom view of a hub according to the present disclosure;

Figure 7 is a side perspective view of one example of a hub according to the embodiment of Figure 1;

Figure 8 is a side perspective view of one example of a portion of a hub assembly of a hub system according to the present disclosure;

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Figure 9 is a perspective view of another example of a portion of a hub assembly of a hub system, according to the present disclosure;

Figure 10 is a perspective view of one example of a frame and hub assembly of the rapid-deployment frame and shelter system, according to Figure 2;

Figure 11 is a close-up view of one example of the frame and hub assembly according to Figure 10;

Figure 12 is a close-up view of one example of a lower portion of the frame and hub assembly according to Figure 10;

Figure 13 is another opposite side perspective view of one example of the frame and hub assembly according to Figure 10;

Figure 14 is a close-up view of one example of a corner frame and hub assembly showing an example of a partial hub according to Figure 10;

Figure 15 A-G is perspective views of another example of a shelter frame and shelter hub assembly in a first deployed position and a second retracted position, according to the present disclosure;

Figure 16A-B are exploded views of one example of a shelter and shelter frame according to examples of the present disclosure;

Figure 17 is a perspective view of one example of a shelter including a hub;

Figures 18-19 are perspective views of examples of a shelter system according to embodiments of the present disclosure;

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Figure 19A is an enlarged view of one example of a shelter frame of Figure 19, and

Figures 20A-D are perspective views of examples of shelters forming a shelter system according to embodiments of the present disclosure.

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Description of Embodiments

In the following description, like reference characters designate like or corresponding parts throughout the several views. Also in the following description, it is to be understood that such terms as "forward," "rearward," "left," "right," "upwardly," "downwardly," and the like are words of convenience and are not to be construed as limiting terms.

Referring now to the drawings in general, it will be understood that the illustrations are for the purpose of describing embodiments of the disclosure and are not intended to limit the disclosure or any invention thereto. Collapsible shelters generally have a short lifespan as they expand and then collapse into a carryable form repetitively, and generally are thrown about experiencing a significant amount of wear and tear. These types of shelters are often thought of as readily replaceable and priced accordingly. Rapid deployment shelters, however, are much more significant purchases and are used under extreme conditions in emergency deployments, precarious weather situations, in remote locations and are expected to function seamlessly, with higher expectations in repetitive deployments. Applicant realizes that durability, ease of use, strength and weight associated with rapid deployment shelters are extreme challenges and can all be limiting factors. It is to these and other challenges that Applicant's improved hub and shelter system is directed.

Figure 1 shows a side view of one example of a hub 10 for a shelter according to an embodiment of the disclosure. A hub 10 for assembly of a shelter may include at least one receiver slot 12, a receiver sleeve 20, and at least one attachment projection 30. In some examples, at least a portion of the hub 10 is made of glass filled nylon and in other examples; the hub 10 may be entirely made of glass filled nylon. Applicant realized that formulating the hub 10 out of glass filled nylon, for example instead of the traditional metal, could give the hub slightly more flexibility than a metal hub, however, strength and durability were concerns. Applicant's hub 10 may exclude metal parts.

One or more hubs 10 may make up a hub system for a deployment shelter 50, as seen in figures 2 and 5. An articulating frame system of frame poles 52 may mate with,

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provide a skeleton frame for, a shelter cover 56. Shelter covers 56 are often made of a fabric or canvas material that may be torn or ripped during contact with traditional frames, especially those with metal parts and assemblies. Applicant's hub reduces the chances of wear and tear on both the frame and the cover of the shelter. In many cases, when a shelter is expanded, a cover 56 is required to be secured to the frame by way of an attachment strap with an attachment buckle that expands between the cover and the hub. The need for such attachment straps has been eliminated with Applicant's improved hub, in one example, by the hub pressure lock structure, described in more detail later. In some examples, however, attachment straps and/or buckles may be desired and are considered with the scope of the inventions of the disclosure.

Any of the shelters 50 shown or described herein may include a variety of field deployment elements. For instance, the shelter 50 may be light weight for easy carry and transport and may include an articulated frame 72, a robust cover/canopy 56 and covering/canopy features. By way of example, a shelter 50 and/or shelter cover 56 may include, flooring 58, floor liner, end wall 59 and door ends 53, lighting features, power features, electrical supply 78, lighting 71, liners 65, bedding, bunk bedding, tables, shelter identification tags, emergency response equipment, and additional water features and water bladders, an anchor 75 serving as a weight, and/or sand bags. Shelters 50 may include windows 68.

The shelters may be any size and multiple shelters may be joined through door ends 53 and/or end walls 59 to create scalable complexes with the advantages of the inventions herein. Joined shelters may be considered shelter systems 170 including more than one shelter joined at a matched face 100 and include any of the embodiments and features included in the present disclosure. Some shelters 50 may serve as a hub shelter 150 and include scalability of connectivity between two or more shelters.

Particular shelter examples include, but are not limited thereto, a unit with floor space of about fifteen feet by twelve feet and an area of about one hundred and height square feet; a unit with floor space of fifteen feet by eighteen feet and an area of about two hundred and seventy feet; and a variety of other sizes.

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In other embodiments, the disclosure includes a shelter kit. In this embodiment, the kit may comprise at least one shelter 50, e.g., any of the shelters and/or shelter accessories shown or described, and a plurality of hubs 10, e.g., any of the hub embodiments shown or described.

Other embodiments, seen throughout Figures 3-8, may be considered a hub 10 for assembly of a rapid-deployment shelter 50. The hub may include, in some examples, a set of receiver slots 12, a receiver sleeve 20 and a set of attachment projections 30. The receiver slot 12 may include slot walls 14, a slot floor 16 and a center slot wall. The receiver sleeve 20 may be medially positioned to the receiver slots 12. The set of attachment projections 30 may be rounded or may take on other shapes. The set of attachment projections 30 may be attached at each end to a slot wall 14. In some examples, an attachment area 29 may be formed between two slots. The attachment area 29 may have one side forming a substantially right angle, formed by the intersection of two receiver slot walls. Opposite the attachment area side having a substantially right angle, the area 29 may include a rounded surface. An attachment projection 30 may be cornered between two receiver slots 12.

The receiver slot 12 may include a first slot wall 14 and a second slot wall 14, positioned such that the two slot walls are substantially parallel, and each attached to a slot center wall and a slot floor 16. In some examples, a slot wall 14 of one receiver slot 12 is substantially perpendicular to the slot wall 14 of an adjacent receiver slot 14.

In some embodiments, receiver sleeve 20 may include an inner receiver 24 and an outer receiver 22 and a sleeve bottom 26. The inner receiver 24 and outer receiver 22 may form a pressure lock system. The inner receiver 24 and outer receiver 22 walls may be angled. The angle may, for example, be between about .001 and 1 degrees, or is contemplated to also be more. The inner receiver 24 may be angled inwardly from the floor. The outer receiver 22 may be angled outwardly from the floor. The inner receiver 24 and outer receiver 22 walls may be angled away from each other at the top of the receiver 20 and toward each other toward the floor of receiver 20. The angled inner receiver 24 wall and the angled outer receiver wall 22 may form a pressure lock system

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for accepting a frame pole 52, for example and specifically a spacer pole 51, and securing the pole with the hub 10.

Attachment projections 30 may be attached on one end to a slot wall 14 that is perpendicular to the slot wall 14 attached to the other attachment projection end. Attachment projections may be curved, rounded or take on any other applicable shape. Many shelter accessories 60 (see Figure 9) are utilized with rapid deployment shelters, as previously discussed, and these items often need to be attached or secured with the shelter. Such items as HVAC components and insulation sheets can be heavy and place a large weight load on the shelter, especially the shelter frame, and there is traditionally not a good place to attach such items. Applicant's hub system includes attachment projections 30 and a pin system 80 that collectively simplify assembly of the shelter and also provide unique attachment options for accessory items and attachments, without compromising the frame and shelter integrity and without increasing shelter carry weight. Attachment projections 30 secure attachment objects to the frame securely so that the attachment objections do not move along the frame. In some examples, the rounded outer side of projections 30 presents a curved surface for contact with the shelter canopy and other accessory items, preventing wear and tearing that may occur with a non-rounded surface.

The attachment projections 30 are configured to allow shelter accessory 60 attachment with accessory attachments 60.

The hub weight, in some examples, may be less than or equal to about 1.75 oz. The hub weight in other examples may be between about 1.25 oz. to about 1.75 oz. The hub may be at least about 4mm thick. The hub may be at least about 5mm thick in other examples. Applicant was able to realize a reduced hub weight of over 40% of that of conventional hubs, while increasing the strength and durability of the hub 10.

In some embodiments, attachment projections 30 may be about 0.20 to about 0.260 inches in thickness. The attachment projections 30 may be at least 0.250 inches in thickness. The hub base, flooring between the slot walls 14, may be substantially between

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0.150 inches to about 0.200 inches in thickness. The hub base may be at least 0.200 inches in thickness in some examples.

Applicant conducted vertical break testing for the hub to simulate the weight that is often supported from a hanging position on attachment points for rapid deployment shelters by accessory and attachment items. Weight was applied to the hub in increments and increased until vertical break was detected. Applicant desired attachment points with low weight, ease of access, durability and strength. In some examples, hub 10 and the attachment projections 30 may have an average vertical break of above 125 lbs., 145 lbs. or 155 lbs. In some examples, the vertical break may be between about 145 lbs. and about 170 lbs.

Applicant conducted lateral break testing to simulate the side pull that is to be withstood from a side load position. Again, Applicant desired attachment points with low weight, ease of access, durability and strength. Weight was again applied to the hub in increments until vertical break was detected. In some examples, the hub 10 and attachment projections 30 may have an average lateral break of above 150 lbs., 160 lbs., or 170 lbs. In some examples, the lateral break may be between 150 lbs. and about 200 lbs.

Other embodiments may be considered a shelter system 70 including a frame 72, a cover /canopy 56 and at least one hub 10. The frame 72 may include a plurality of interconnected frame poles 52. The frame may include a connector 57. The connector 57 may span between the front right and front left corners of the frame. The connector 57 may also span between the back left and back right corners of the frame. The connectors may be frame poles 52, straps, elastic, nylon or any other suitable material. The connectors may stabilize the frame. The connectors may be a set of connectors joined end to end. The connectors may be frame base connectors. The frame poles 52 may be configured to alternate between a first extended position and a second retracted position. The retracted positon may include just the frame poles 52 in a retracted position, the frame poles 52 and the hubs 10 in a retracted position, and/or the frame poles 52, hubs 10 and the canopy 56 in a retracted position, assembled and/or unassembled for storage and

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transport. The entire shelter system may fully retract in a second position and fully expand without assembly into a first deployed position. The cover 56 may be configured to mate with the frame 72 and/or be secured to the frame or may be already mated with the frame. The hub 10 may include a set of receiver slots 12, a receiver sleeve 20, and a set of attachment projections 30.

In one embodiment, a shelter 50 may include a frame 72 and a cover 56. The cover may include at least two end walls 59a joined with at least two side walls 59b and a roof 59c. The end walls 59a may be removable and/or retractable. End walls 59a may be attached to the side walls 59b, for example, by Velcro, zipper, hooks, buttons, ties, a combination of these, and/or any securing means. The end wall 59a may include a door end 53. Door end 53 may be removable and/or may be retractable. The roof 59c may mate with the side walls 59b. The roof may include a peak in the roofline that runs along the length of the cover and angles downwardly on each side of the peak toward an interface of the roof and each side wall. A side wall 59b may include one or more window 68. An end wall may include one or more window 68. A side wall 59b may include an access panel 67. End wall 68 may include one or more access panel 67. Access panel 67 may be, in one example, an HVAC access panel adapted to incorporate an HVAC system into the shelter 50.

The shelter 50 may include an insulation liner 65. The insulation liner may include windows 68. The windows 68 of the insulation liner may align with the shelter windows in the cover 56. Insulation liner 65 may include an access panel 67. The access panel 67 in the insulation liner 65 may align with an access panel 67 in the side wall 59b. The insulation liner 65 may be aligned with and attached to the frame 72. The frame 72 may support insulation liner 65. As seen in Figure 9, insulation liner may attach to frame 72 and hang supported by way of frame 72. In some examples, the insulation liner 65 may attach to a hub 10 in the frame 72 by way of attachment to an attachment projection 30.

The shelter system 50 may include lighting 71 for the shelter. The shelter system 50 may include an electrical supply 78 for the shelter.

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In some embodiments the pin system 80 may include a plurality of pins and matched washers. Applicant's pin system, as seen in Figures 5 and 7, may fit through slot openings 17 on slot receiver walls 14 to secure in place attachments and/or frame poles 52. Once a frame pole 52 is mated with a hub 10, the pole 52 may be secured movably to the hub 10 with a pin system 80 with a washer 89 and pin 86. Applicant's articulating frame poles 52 and configuration may include openings that accommodate and match with the openings 17 and the pin system 80. By way of example, the pin 86 and washer 89 may be made of glass filled nylon able to remain durable and also light weight and easy to repeatedly remove and replace into position. In this example, the pin 86 is configured to slide through the hub and tubes of the frame and to mate with its mated washer that is configured to pop over the end of the pin to lock tight. Conventionally, metal pins with split rings have been utilized with shelters, with the split rings being difficult to remove and assemble quickly and extremely difficult to replace in the field. Applicant's pin system increases ease of assembly and removal, maintains strength and decreases weight load. Applicant's pin system is economical, durable and reduces the time for assembly and/or repair of the shelter system.

Figures 10-14 show examples of a shelter system, one example including frame and hub assemblies, 70. A frame and hub assembly may include a set of hubs 10 and a set of frame poles 72. In some examples, the frame and hub assembly may include variations of the hub, for example, partial hubs 63, by way of example, for corners of the frame assembly. Embodiments may include methods for assembly of the frame and hub assembly in which the frame poles are connected through the hubs. In some examples, a hub may be placed and oriented top down, bottom down and/or on a hub side (seen in Figure 12) to form the frame and hub assembly. There may be a portion of the hubs horizontally oriented in connecting the frame poles and a portion of the hubs vertically oriented in the frame and hub assembly. There may be partial hubs included in the frame and hub assembly. Partial hubs 63 may be specialized to accept frame poles in particular hard to fit positions, for example, in frame and hub assembly corners and/or long frame pole articulations.

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In still other examples, the inventions of the present disclosure may be considered a shelter and frame for an emergency, rapid-deployment shelter system. The frame may include a set of hubs 10 and a set of frame poles 52, at least a portion of the frame poles secured with a portion of the hubs to form a skeleton frame for a rapid-deployment shelter system. The shelter and frame for an emergency, rapid-deployment shelter system fully assembled and movable between a first deployed position and a second retractable position. In the retracted position, the canopy, 56, frame poles 72 and hubs 10 may stay substantially attached with the frame poles 72 collapsing parallel and next to each other. The frame poles 72 may be internal poles, external poles and ceiling poles. Frame poles 72 may, for example, be in pairs 77. The poles in pairs may be connected at about a center point and the poles may retract to be parallel in the same plane. The poles in pairs may be connected at about a center point and the poles may rotate about an axis A (Figure 10, 13) at the connected point to diverge at their ends away from each other. The connected poles may diverge at an angle alpha. The angle alpha may be about 1 to less than 90 degrees. The angle alpha may, by way of example, be about 5 to about 25 degrees.

As seen in Figure 11, the frame poles 52 may link with the hubs 10 to form frame 72. Attachment projections 30 are configured to accept attachment items.

Figure 12 shows a vertically aligned hub 10. Vertically aligned hubs 10 within the frame 72 may, as shown in Figure 12, configure a space into the frame system and act as a spacer between two surfaces. The lower frame poles 52 in this example connect with a receiver slot 12 on a hub, thus the hub acting as a spacer to maintain a space between at least a portion of the lower frame poles 52 and the ground. In this instance, the space 73 is beneficial and allows portions of the canopy to wrap under the frame 70, and in some examples, without supporting weight.

Figures 15A-G show a shelter system 70 in a retracted position (Figure 15A). The shelter system may include a case 85. The case 85 may be a tough and durable material, for example, a vinyl material. The shelter may be encased in the cover for transport and storage. In use, the case is removed, and a liner may be included. In this example, the

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liner is removed. The shelter legs are bunched together in a substantially parallel position in the retracted position (Figure 15B). A user may determine the end wall 59a and the side wall 59b of the retracted shelter. An end wall 59a may have at least 5 associated frame legs and a side wall of the shelter may have less than 5 associated legs. The shelter may be staged in its desired location. Expansion bars may be located within the frame, for example, top center bars of each wall, to be grasped and pulled apart, away from the retracted shelter on each wall end. The shelter may best, by way of example, move into the deployed position by raising the shelter slightly off the ground as the expansion bars are pulled outwardly as the articulating frame expands (Figure 15C). The user lifts at the center point of each door end at the front and back of the shelter and the frame lifts into place, self-standing and fully deployed (Figure 15D, 15G). A floor 58'/floor liner 58 may be added to the shelter or may be included (Figure 15F). The floor 58 may be aligned to meet the shelter canopy side walls 59b and end walls 59a. An insulation liner 65 may be attached at the projections 30.

Other accessory items may be added to the system 70, by way of example, there may be an access panel 68, by way of example, an HVAC access panel, in the canopy at which point an HVAC duct is placed and secured in order to attach to an HVAC system. In other examples, lighting 71, power, and supplies may also be added to the shelter system. Access panels may provide interior access to units such as HVAC units that are located exterior to the shelter but are attached to interior accessories.

In other embodiments, the inventions of the present disclosure may be considered a shelter and frame for an emergency, rapid-deployment shelter system 170. A shelter 50 may include an end wall 59 including a framework, the frame 72 forming a frame end 110 at the end wall 59. As seen in Figures 2, 16A, and 18, and exploded in Figure 16B. The frame end 110 may include angles alphaA at the corners of the shelter. The angles alphaA may, in some examples include upper angles of greater than 90 degrees. In some examples, the alphaA angles in the upper angles of the shelter may between 90 degrees and 150 degrees. In some examples, the upper angles may more specifically be all above 125 degrees. Still, in other examples, the upper angle 72b may be greater than upper

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angles 72a and 72c. Upper angle 72b may be in some examples between 130 degrees and 145 degrees, and preferably in some examples between 135 and 140 degrees. Angles 72a and 72c may in some examples include an angle of between 125 degrees and 135 degrees, an in some examples preferably between 128 degrees and 132 degrees. Angles at legs 72d and 72e may be angles of less than angles 72a and 72c. In some embodiments, angles 72d, 72e may be between 65 degrees and 75 degrees, and more specifically in some examples, between 70 degrees and 74 degrees.

More than one shelter may be assembled frame end to frame end to form a scalable shelter complex. In this example, as shown in Figures 18 and 20A-D, one shelter having a frame end 110 may mate directly with another shelter having a frame end 110, ultimately interfacing the side walls of each shelter one with another with the end walls 59a of each removed to make a continuous inner space between the two joined shelters. In one embodiment, the two shelters, both including the frame ends may mate directly between the two frame ends 110, without requiring a vestibule or smaller opening structure between the two frame ends 110. A shelter attachment 140 may mimic the end wall 59 frame dimension and fit with the adjoining shelters to direct a water flow away from the frame ends 110 where they connect, and direct it, as a gutter away from the shelter system, see Figure 19. In some examples, the shelter attachment 140 may assist in making a substantially waterproof connection site between two adjoining shelters.

In other examples, a shelter may include more than one end wall 59. A shelter with more than one end wall 59 may, in some example be a hub shelter 150, allowing the attachment of more than one additional shelters, and in some cases up to four additional shelters for form a shelter system 170 adaptable as a shelter complex. The hub shelter 150 may include, in some embodiments two additional end walls 59a in place of or incorporated into the side wall/s 59b. As shown in Figures 20A-D this configuration allows the hub shelter 150 to adjoin with other shelters, with end walls removed, without a narrowing opening between the two shelters. The hub shelter 150 also is adaptable to accommodate at least four shelter attachments to the shelter hub 150. The shelter hub 150 may include four frame ends 110 that each mate with shelters having a frame end 110.

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The hub shelter 150 may include a larger surface area along the end wall 59, while still mating to a frame end 110 to the frame end 110 of the adjoining shelter 50. The hub shelter 150 may include other configurations of frame end openings, including a rounded opening by way of example and mate with an adjoining shelter 70 including a frame end opening with the same dimensions so that the two shelters 150, 70 mate without a narrowing in the opening between the two shelter frame end openings. The hub shelter may include corners 112. The corners 112 may project between the shelters 50 adjoining the shelter hub 150 at the frame end openings and in the cover 56.

Figures 19 and 19A show one example of a frame of hub shelter 150 for supporting the shelter. The frame 72 may include a frame front end 172a, a frame back end 172d, a frame side 172b, and a frame opposite side 172c. The frame 72 may in this example be a four-sided shelter frame including frame corners 112a offset between each of the shelter sides, frame ends. The frame configuration, in some examples, may be the same on each of the frame front end, the frame back end, the frame side, and/or the frame opposite end. The frame front end 172a, frame back end 172d, frame side 172b and frame opposite side 172c may each include a first upper frame pole 52a and a second upper frame pole 52b. The first upper frame pole 52a and the second upper frame pole 52b may be joined at peak 152. Each end and side may include a peak 152. The frame may include a first leg pole 52c supporting the first upper frame pole and a second leg pole 52d supporting the second upper frame pole. There may be a shoulder 153 formed between each upper frame pole and each attaching leg pole and a shoulder 153 formed between each second upper frame pole and each attaching second leg pole. A center frame assembly 174 may include a set of extension poles 52e that extend outwardly from a center point of the center frame assembly to one of the frame peaks 152. A frame corner 112a may be formed between the frame front end 172a and each of the frame sides 172b, 172c, and the frame opposite side 172d. A frame corner 112a may be formed between the frame back end 172d and each of the frame side 172b, and the frame opposite side 172c.

A shoulder support 176 may extend between adjacent shoulders 153 of each corner 112a. The frame corners 112a may be offset from the frame sides. The frame

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corners 112a may, as shown, have a face that extends in a different plane than a plane formed by the face of the frame ends or sides 172. The frame corners may include a shoulder support 176 and two frame legs 52. The legs 52 may be, in some instances, a leg from a frame side and a leg from a frame end.

Supports 178 may be located, by way of example, between an extension pole 52e and either a frame front, frame back, frame side, or frame opposite side. Supports 178 may extend to an upper frame pole 52a or a second upper frame pole 52b.

Frame legs may extend from a shoulder 153 downward toward a footing 179 that supports the leg on a ground surface. Legs forming a corner 112a may angle toward one another and meet at a ground surface. Legs 52c, 52d may be distanced apart by a shoulder support 176 at a distance greater than they are from one another at the footings 179. The frame corner 112a may space apart a frame end and a frame side. Each frame end and each frame side may be flanked by a frame corner 112a. The frame poles 52 may be articulating frame poles that move about an axis joint where one pole attaches to another pole.

In other examples the inventions disclosed may be considered hub and shelter methods, for example a method for a hub, a method for a shelter system kit, a method for an improved shelter and a method for rapid deployment of a shelter according to the disclosure.

In yet another embodiment of the disclosure, included is a method for assembling a collapsed shelter 10 and securing the shelter 10 with a hub system according to any of the examples disclosed. In one example, the method may include carrying the shelter 10 collapsed, separating and/or unfolding the walls 12, expanding the shelter 10, aligning the frame of the shelter with a hub system to secure the shelter, e.g., including any of the embodiments previously shown or described. The method may also include attaching accessory items to an attachment projection 30 of a hub 10.

Portability of the shelter allows any of the shelter embodiments and examples shown and described herein to be transported to remote and difficult to reach locations, for instance because the hub and shelter components are lightweight to carry and

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collapsible. Often, in rapid deployment situations, shelters may be quickly set-up in a variety of environments, quickly taken-down and remain easily mobile.

Those of ordinary skill in the art having the benefit of this disclosure will recognize that any of the shelters and hub system described herein includes a variety of sizes, shapes, styles and support materials, all of which are considered within the scope of this disclosure.

Numerous characteristics and advantages have been set forth in the foregoing description, together with details of structure and function. Many of the novel features are pointed out in the appended claims. The disclosure, however, is illustrative only, and changes may be made in detail, especially in matters of shape, size, and arrangement of parts, within the principle of the disclosure, to the full extent indicated by the broad general meaning of the terms in which the general claims are expressed. It is further noted that, as used in this application, the singular forms “a,” “an,” and “the” include plural referents unless expressly and unequivocally limited to one referent.

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We Claim:

1. A rapid-deployment hub shelter comprising:

a frame for supporting the shelter, the frame including a frame front end, a frame back end, a frame side, and a frame opposite side,

the frame front end, frame back end, frame side and frame opposite side each having:

a first upper frame pole and a second upper frame pole, the first upper frame pole and the second upper frame pole joined at peak,

a first leg pole supporting the first upper frame pole and a second leg pole supporting the second upper frame pole,

a shoulder formed between each upper frame pole and each attaching leg pole,

a shoulder formed between each second upper frame pole and each attaching second leg pole,

a center frame assembly having a set of extension poles that extend outwardly from a center point to each frame peak,

a corner formed between the frame front end and each of the frame side, and the frame opposite side, and

a corner formed between the frame back end and each of the frame side, and the frame opposite side.

2. The rapid-deployment shelter of claim 1 including a shoulder support extending between adjacent shoulders of each corner.

3. The rapid-deployment shelter of claim 2 wherein each corner is a triangular shaped corner.

4. The rapid-deployment shelter of claim 2 wherein each corner is set on a different plane than each frame front end, frame back end, frame side, and frame opposite side.

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5. The rapid-deployment shelter of claim 2 wherein each corner includes a shoulder from either the front end or the back end and a shoulder from either the side or the opposite side with a shoulder support extending between.

6. The rapid-deployment shelter of claim 5 wherein each corner includes a leg from either the front end or the back end and a leg from either the side or the opposite side.

7. The rapid-deployment shelter of claim 6 wherein the center assembly interconnects the front end, back end, side and opposite side of the shelter frame.

8. The rapid-deployment shelter of claim 7 having a peak formed along each of the front end, back end, side and opposite side.

9. The rapid-deployment shelter of claim 8 including a set of supports, with one support extending between each extension pole to an upper frame pole and one support extending between each extension pole to a second upper frame pole.

10. The rapid-deployment shelter of claim 8 wherein each leg forming a corner meets one with another at each leg footing.

11. The rapid-deployment shelter of claim 8 where the distance between each leg forming the corner narrows between the shoulders of the corner and the leg footings.

12. The rapid-deployment shelter of claim 1wherein each of the frame front end, back end, side and opposite side is adapted to provide an opening for mating with another shelter.

13. The rapid-deployment shelter of claim 1 including an angle alpha between the upper frame pole and the leg pole and between the second upper frame pole and the second leg pole.

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14. The rapid-deployment shelter of claim 1 wherein each corner separates adjacent shoulders of a frame end and a frame side.

15. A rapid-deployment hub shelter comprising:

a four-sided shelter frame including frame corners offset between each of the shelter sides,

a shoulder support in each corner and extending between each of the adjacent shelter sides,

a set of upper frame poles on each side of the four-sided shelter frame that mate to form a central peak along each shelter side,

a central frame assembly having extension poles that extend from the central frame assembly to each peak along each shelter side,

wherein each of the shelter sides have the same frame dimensions.

16. The rapid-deployment shelter of claim 15 wherein the set of upper frame poles each terminate at frame shoulders that are separated by the shoulder support.

17. The rapid-deployment shelter of claim 16 including footers that mate one with another at a ground surface to secure the frame corner.

18. The rapid-deployment shelter of claim 17 wherein each corner includes a set of legs that supports one of the frame sides.

19. The rapid-deployment shelter of claim 18 wherein each of the set of legs define a distance that narrows between the shoulder support and each of the leg footings.

20. The rapid-deployment shelter of claim 19 wherein the four-sided shelter frame is adapted to alternate between a collapsible position and a deployed position.

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Abstract

A shelter system is shown and described. A hub for a shelter system is shown and described. A frame for a shelter system is shown and described. In one embodiment, the shelter system includes a frame and cover. The shelter may include a hub system. The frame may be collapsible. The cover is configured to fit with the frame. The hub may include a receiver slot, a receiver sleeve and an attachment projection. The result is a shelter system with reduced set up time, effort and requirements and improved strength and ease of use. The inventions may also be considered a shelter kit and/or a shelter and hub method.

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DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	SHELTER AND HUB SYSTEM

As the below named inventor, I hereby declare that:

This declaration is directed to:

- ☐ The attached application, or
- ☒ United States application or PCT international application number 15/639261 filed on June 30, 2017.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

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LEGAL NAME OF INVENTOR

Inventor: Jonathan Urhausen X Date (Optional): 09/14/17

Signature: X

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Title of Invention	SHELTER AND HUB SYSTEM

As the below named inventor, I hereby declare that:

This declaration is directed to:

- ☐ The attached application, or
- ■ United States application or PCT international application number 15/639261 filed on June 30, 2017.

The above-identified application was made or authorized to be made by me.

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LEGAL NAME OF INVENTOR

Inventor: Adam Barr X Date (Optional): 9/14/17

Signature X Adam Barr

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form. Use an additional PTO/AIA/01 form for each additional inventor.

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If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

PTO/AIA/01 (06-12)
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DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	SHELTER AND HUB SYSTEM

As the below named inventor, I hereby declare that:

This declaration is directed to:

- ☐ The attached application, or
- ■ United States application or PCT international application number 15/639261 filed on June 30, 2017.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

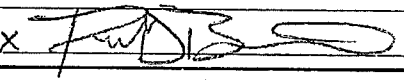
I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

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LEGAL NAME OF INVENTOR

Inventor: Donald Bierman X Date (Optional): 9/14/17

Signature: X 

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form. Use an additional PTO/AIA/01 form for each additional inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

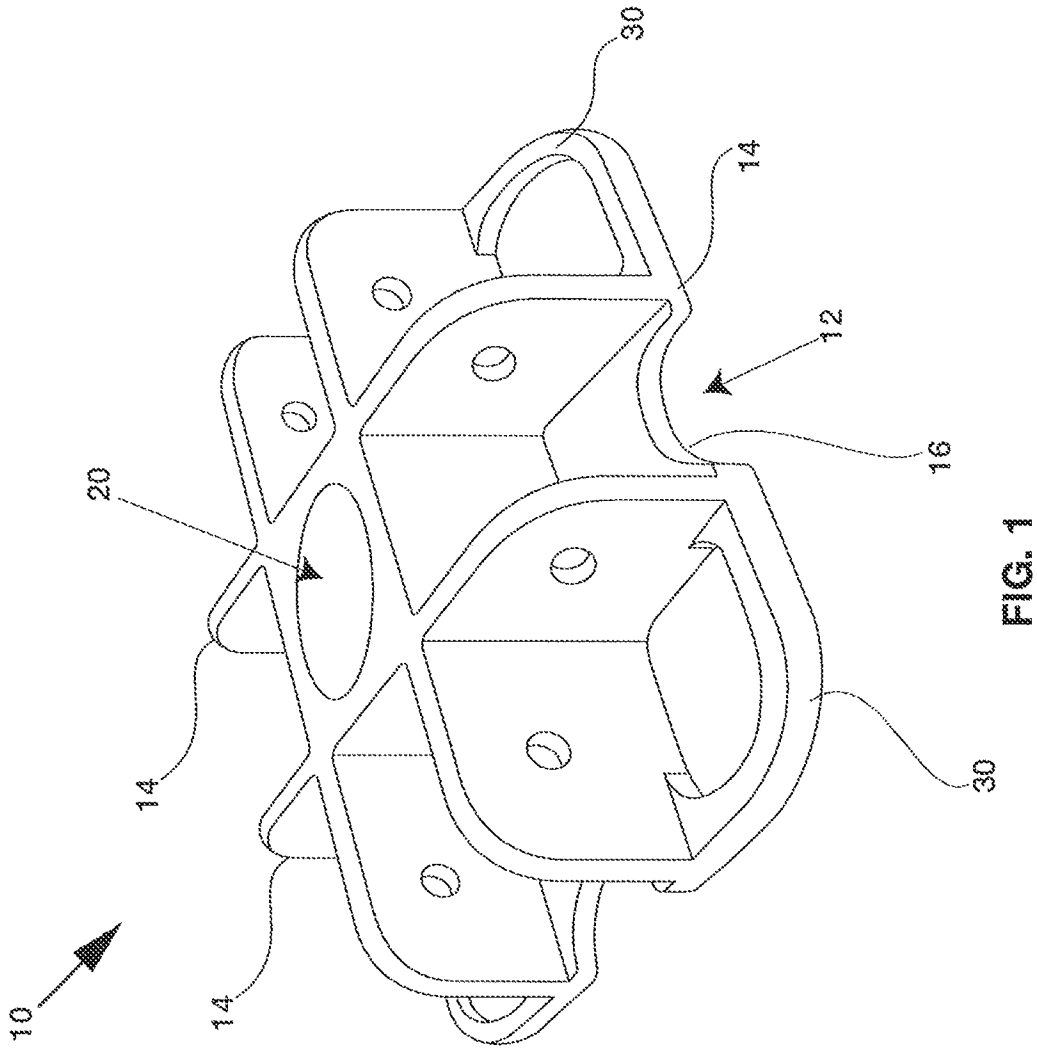


FIG. 1

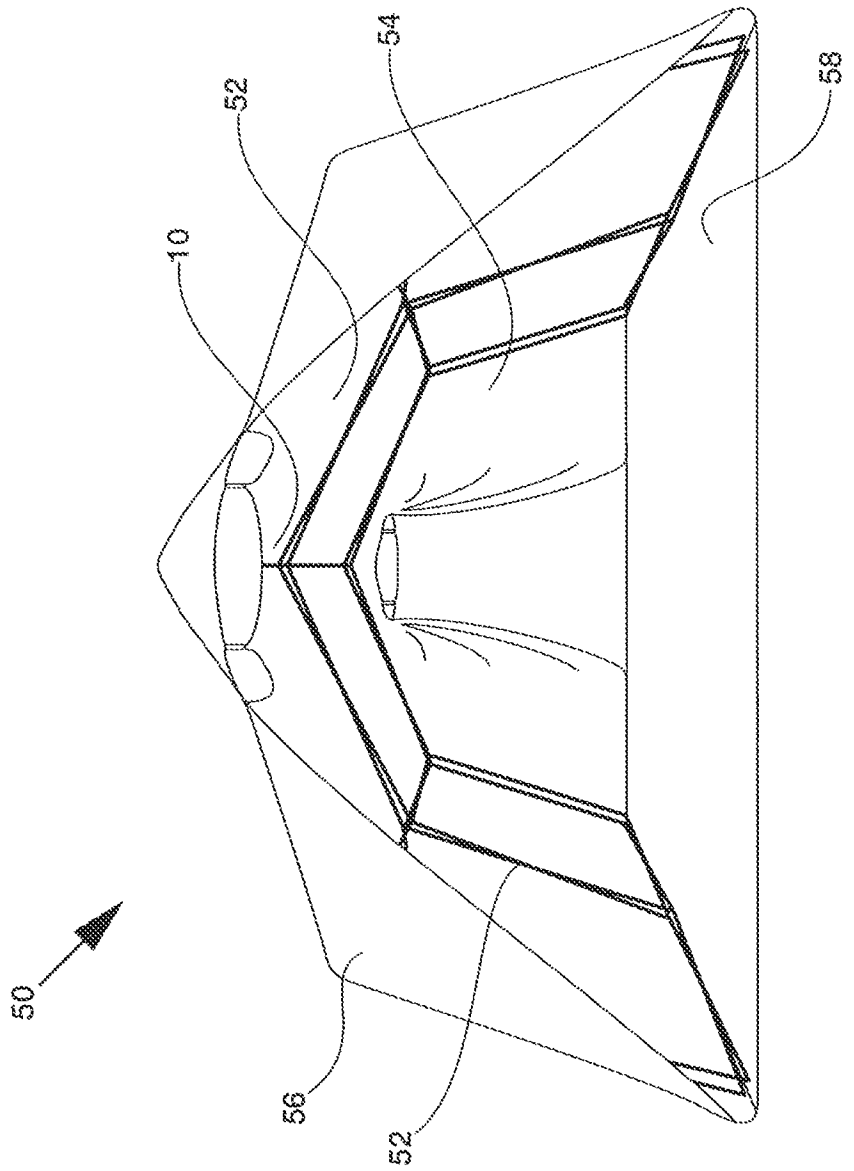


FIG. 2

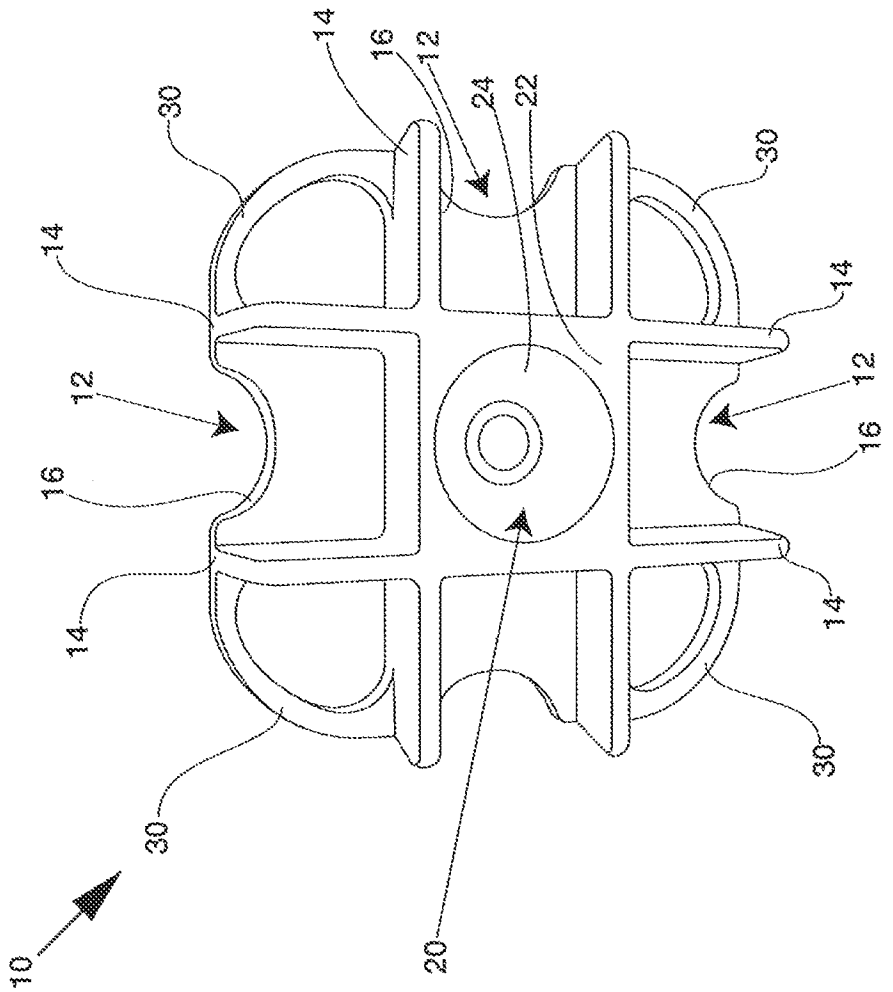


FIG. 3

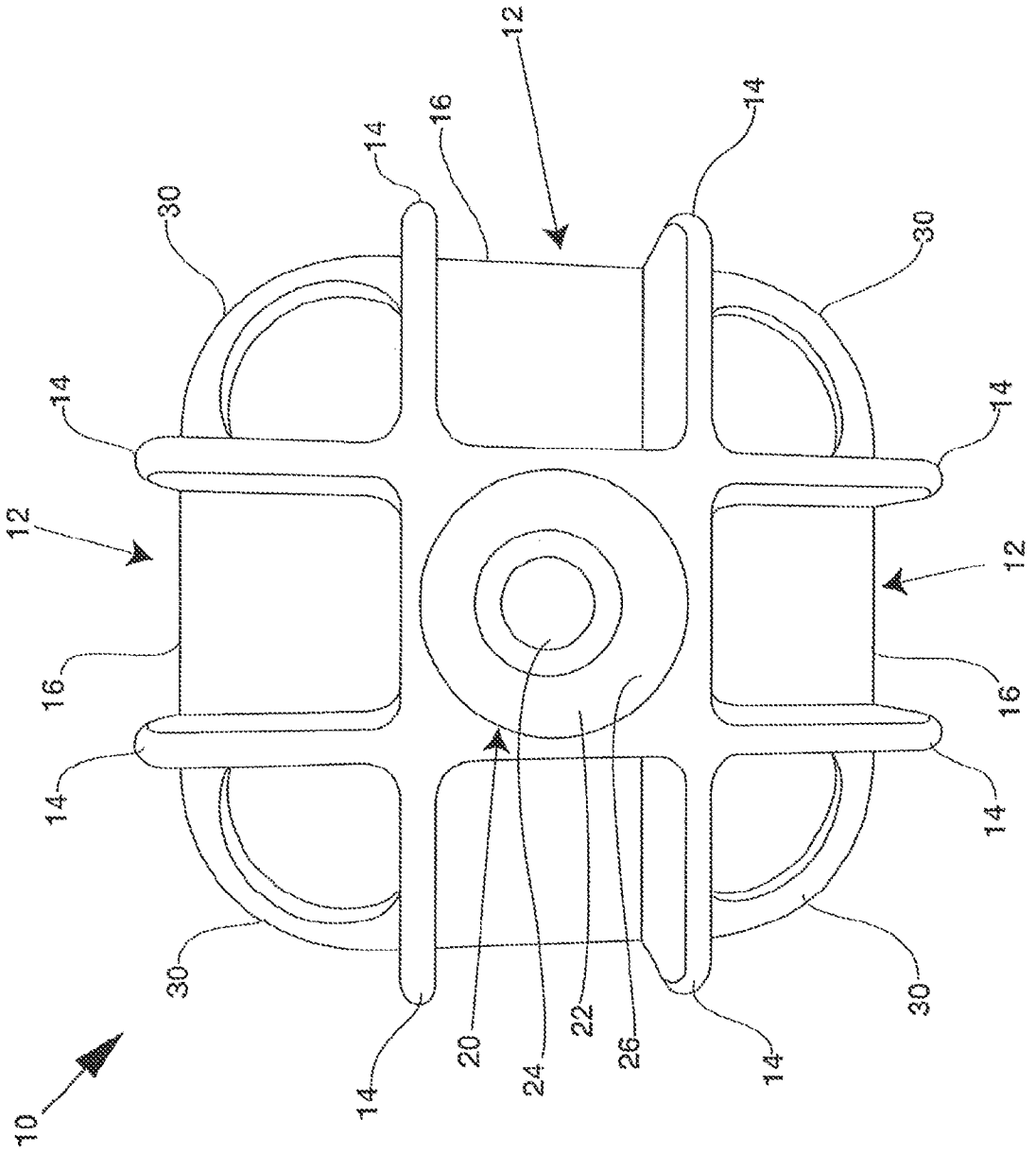


FIG. 4

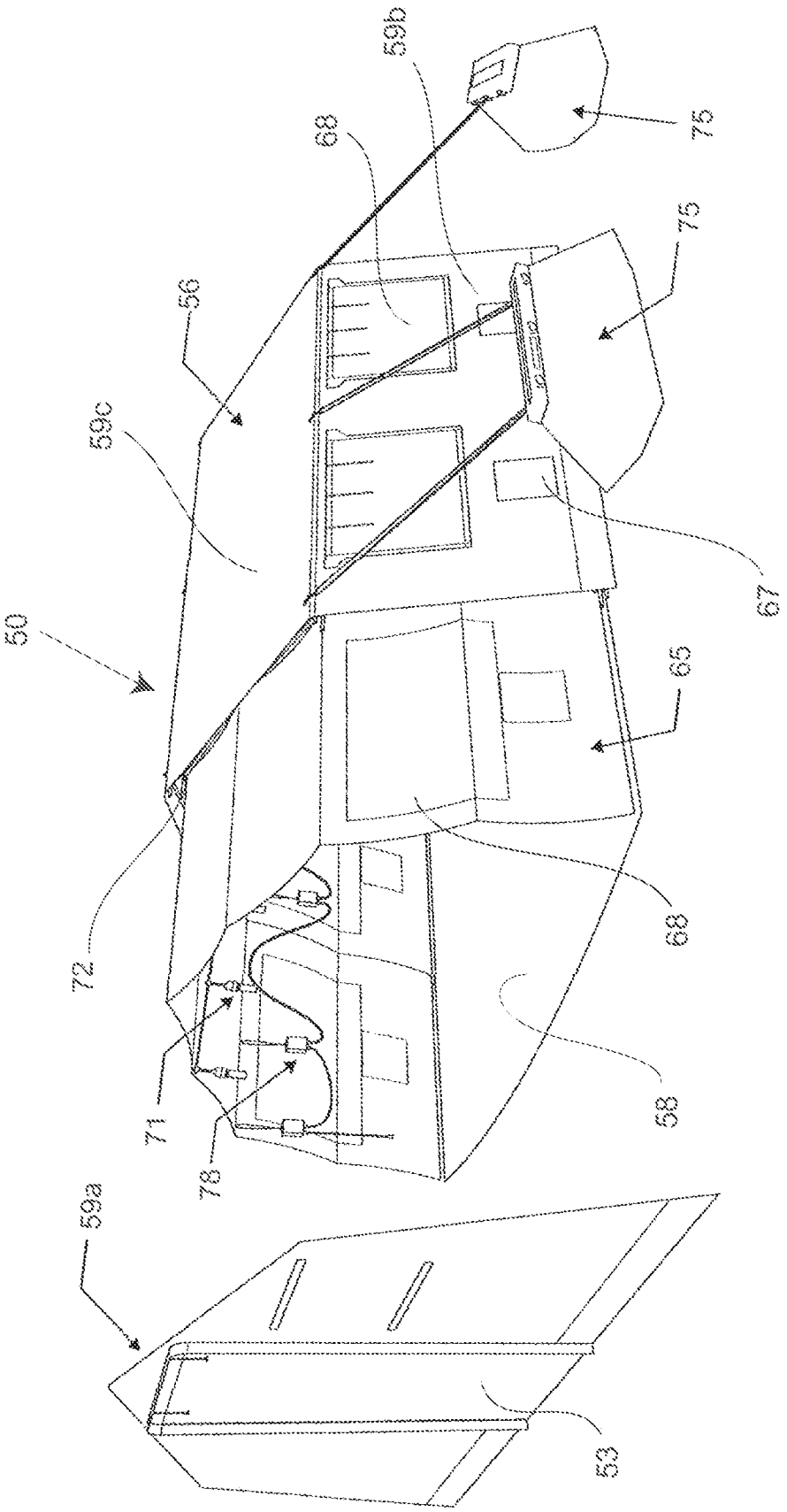


FIG. 5

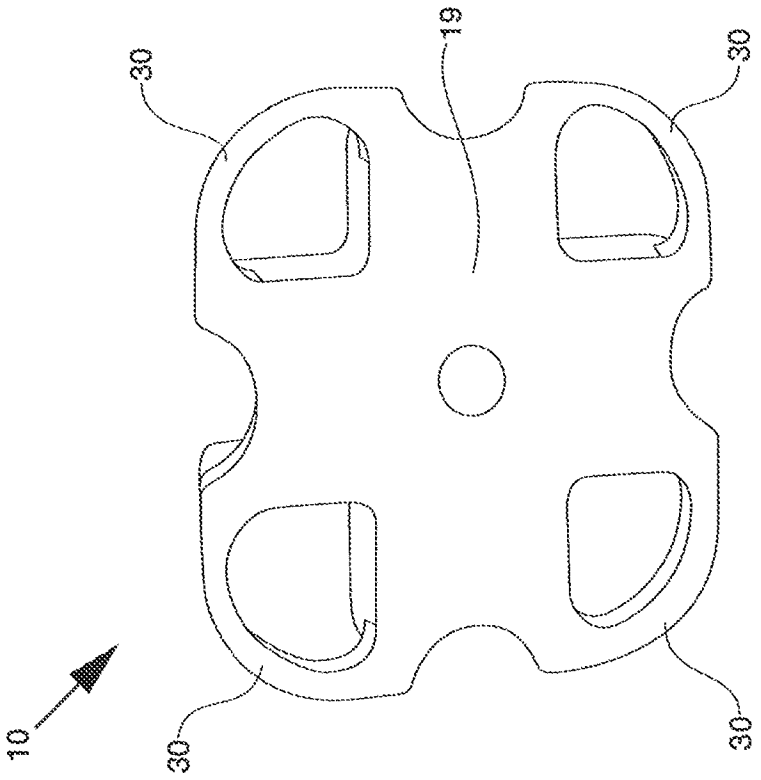


FIG. 6

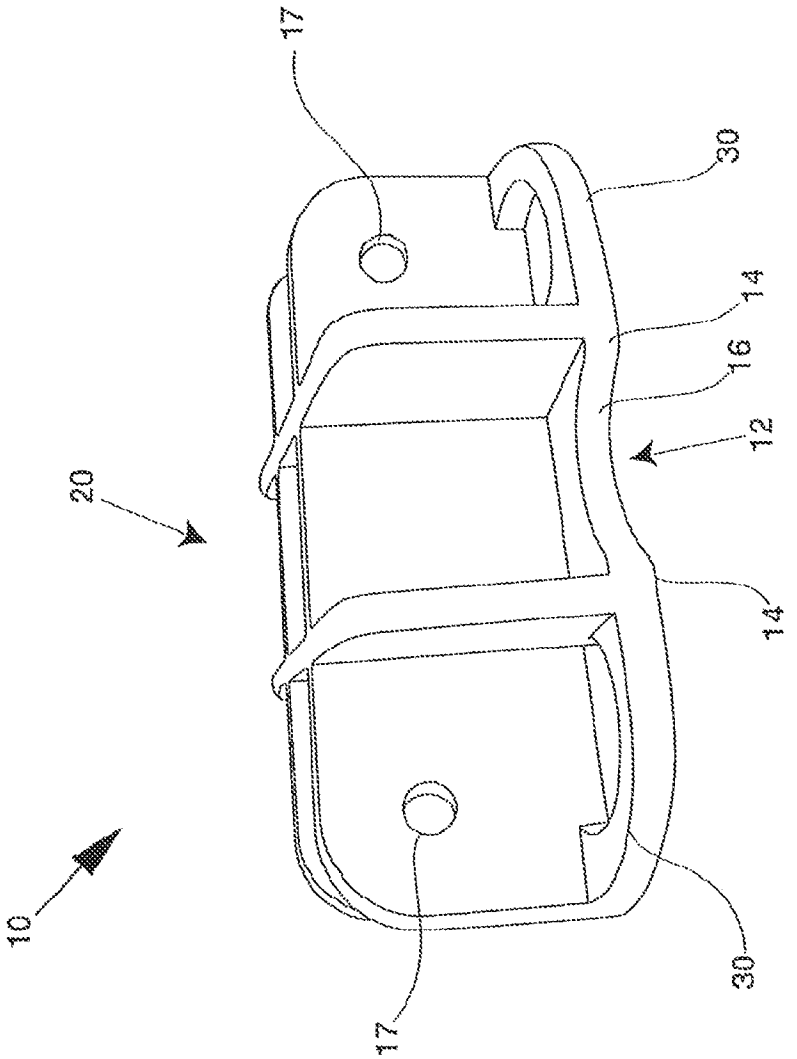


FIG. 7

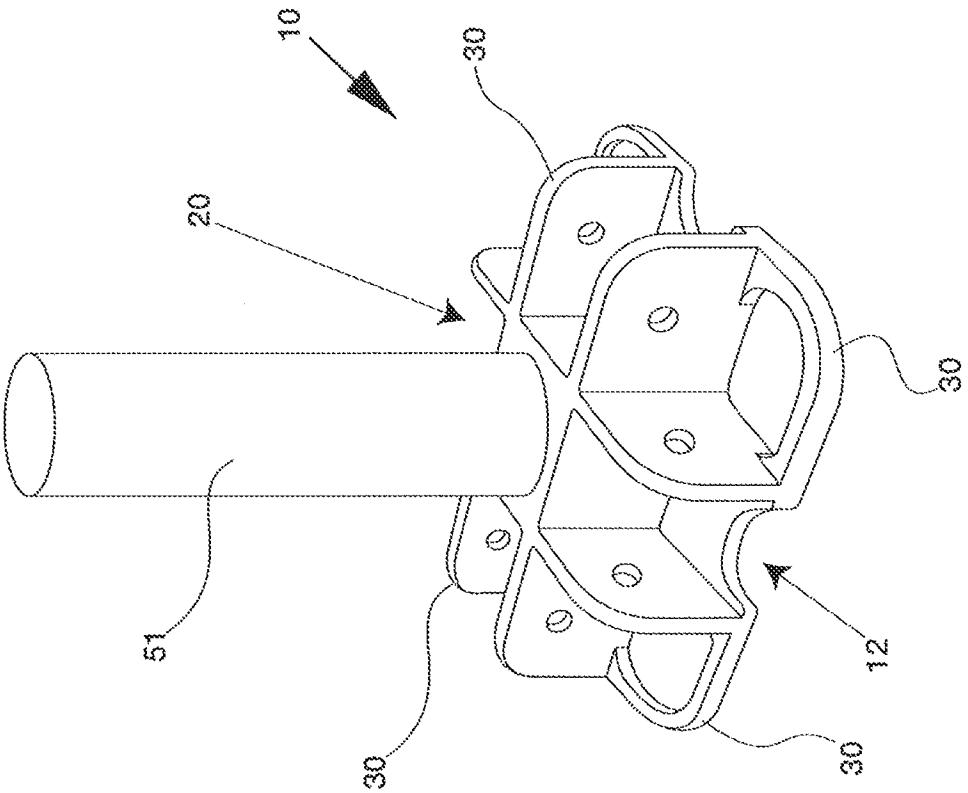


FIG. 8

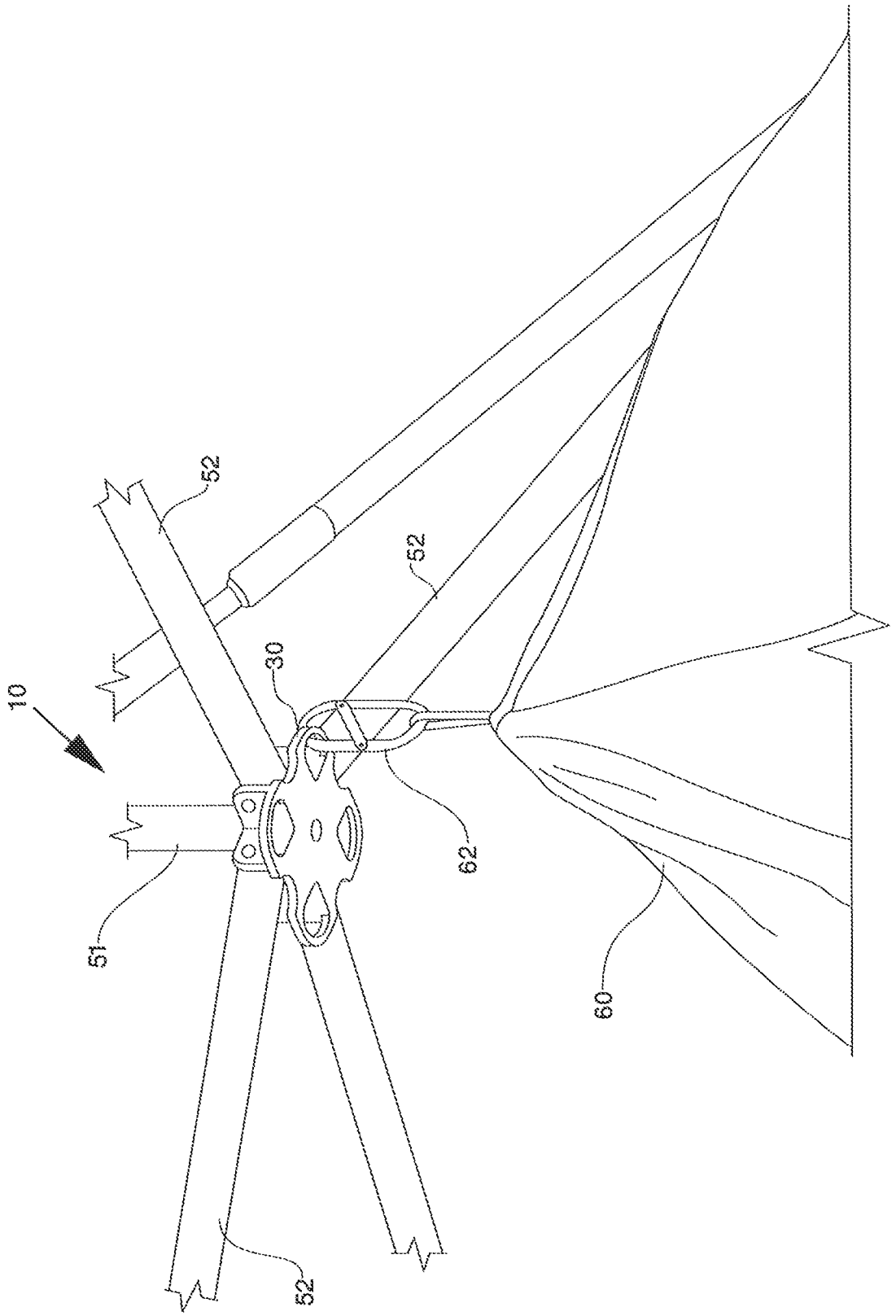


FIG. 9

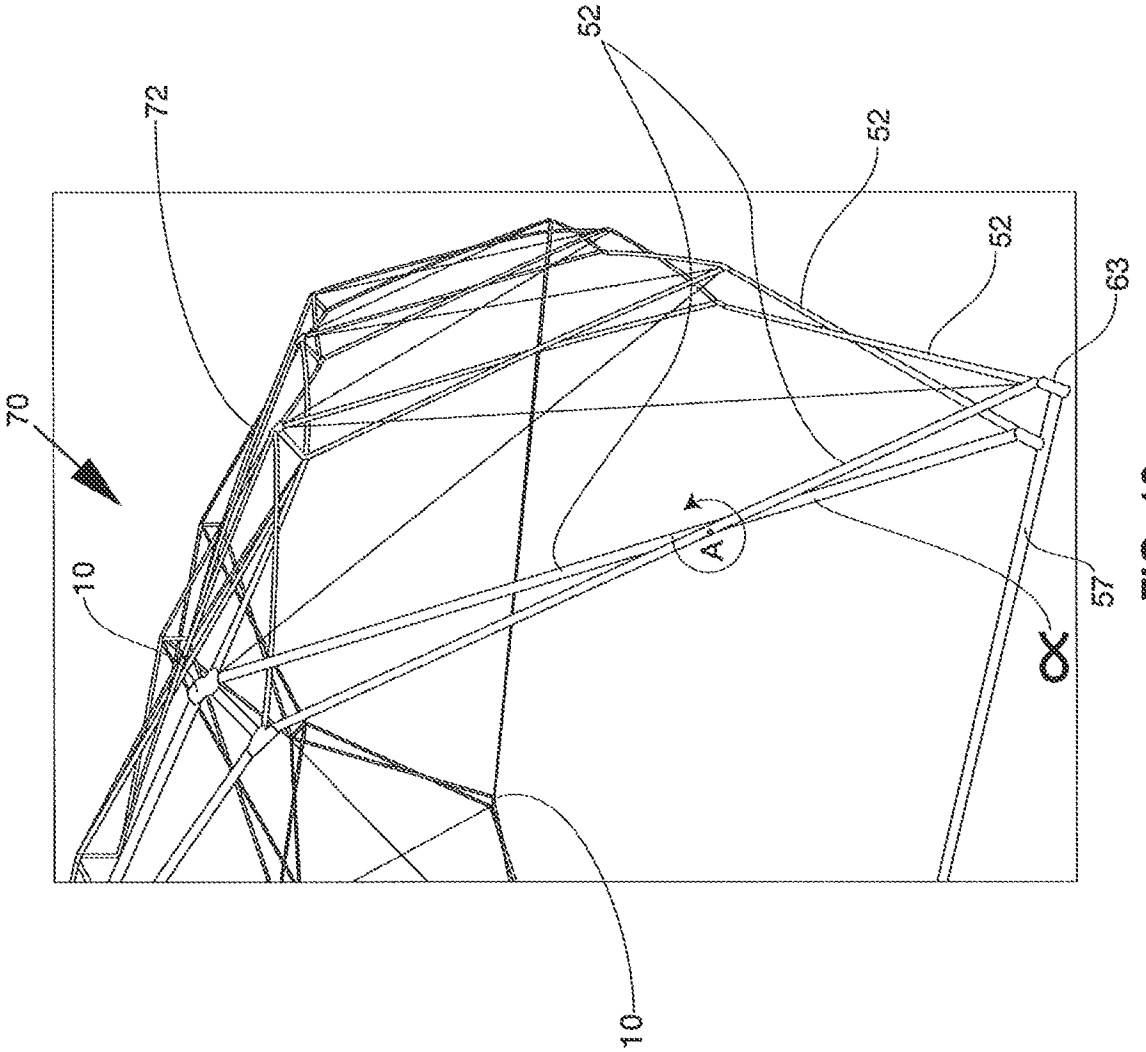


FIG. 10

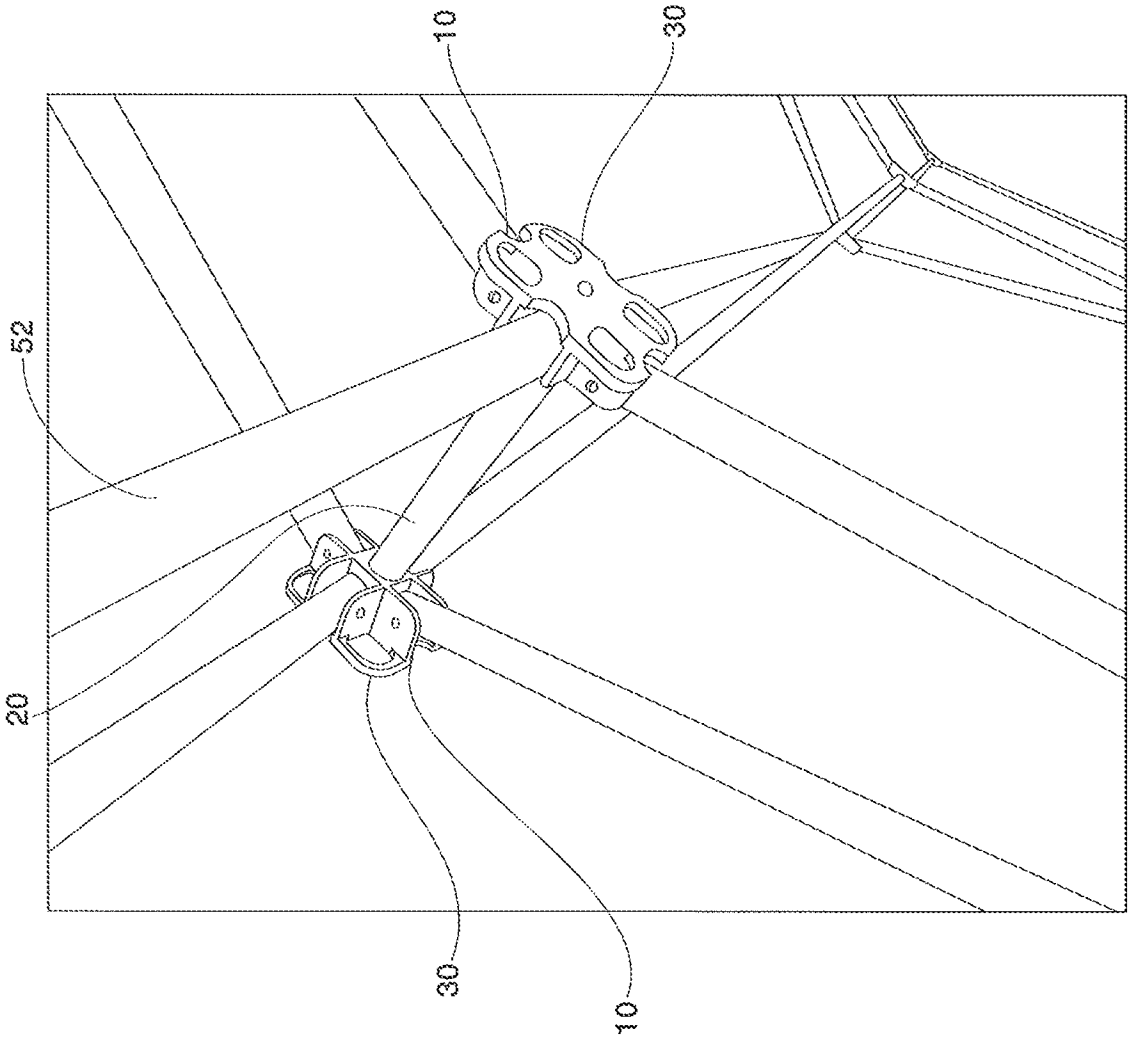


FIG. 11

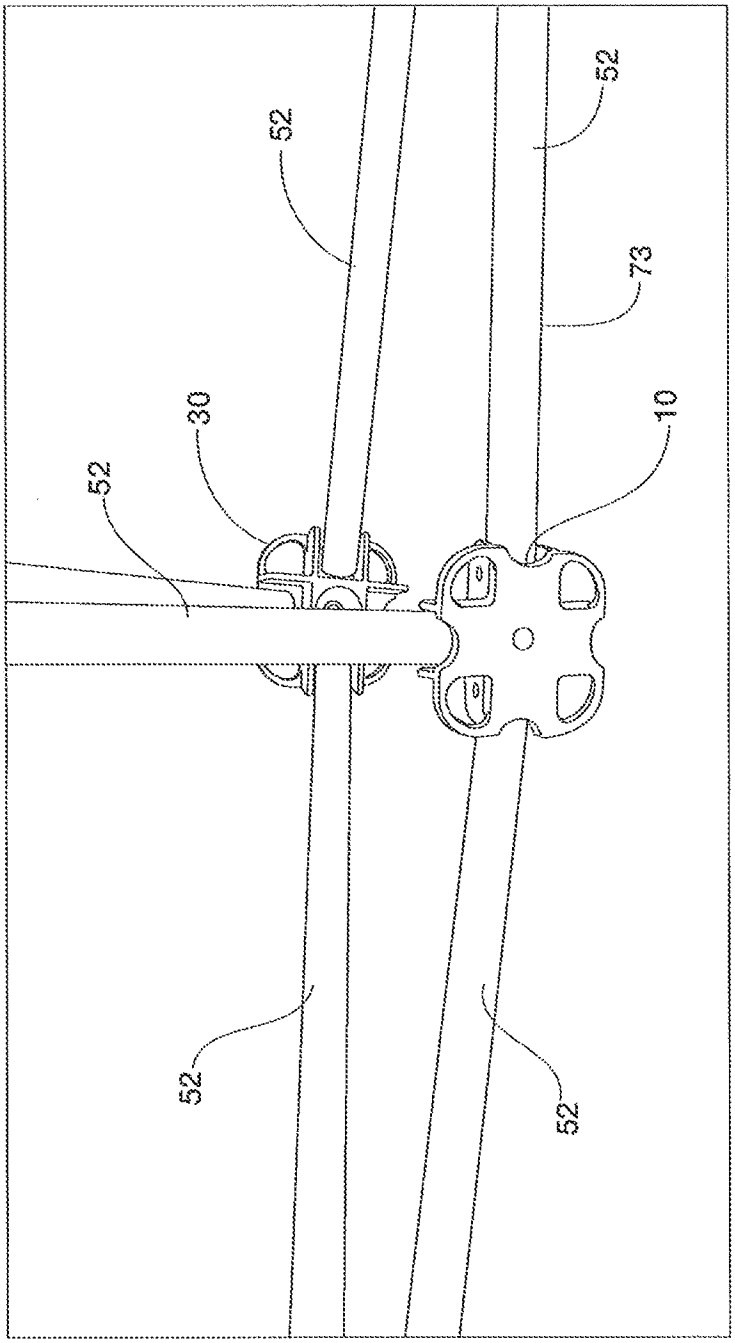


FIG. 12

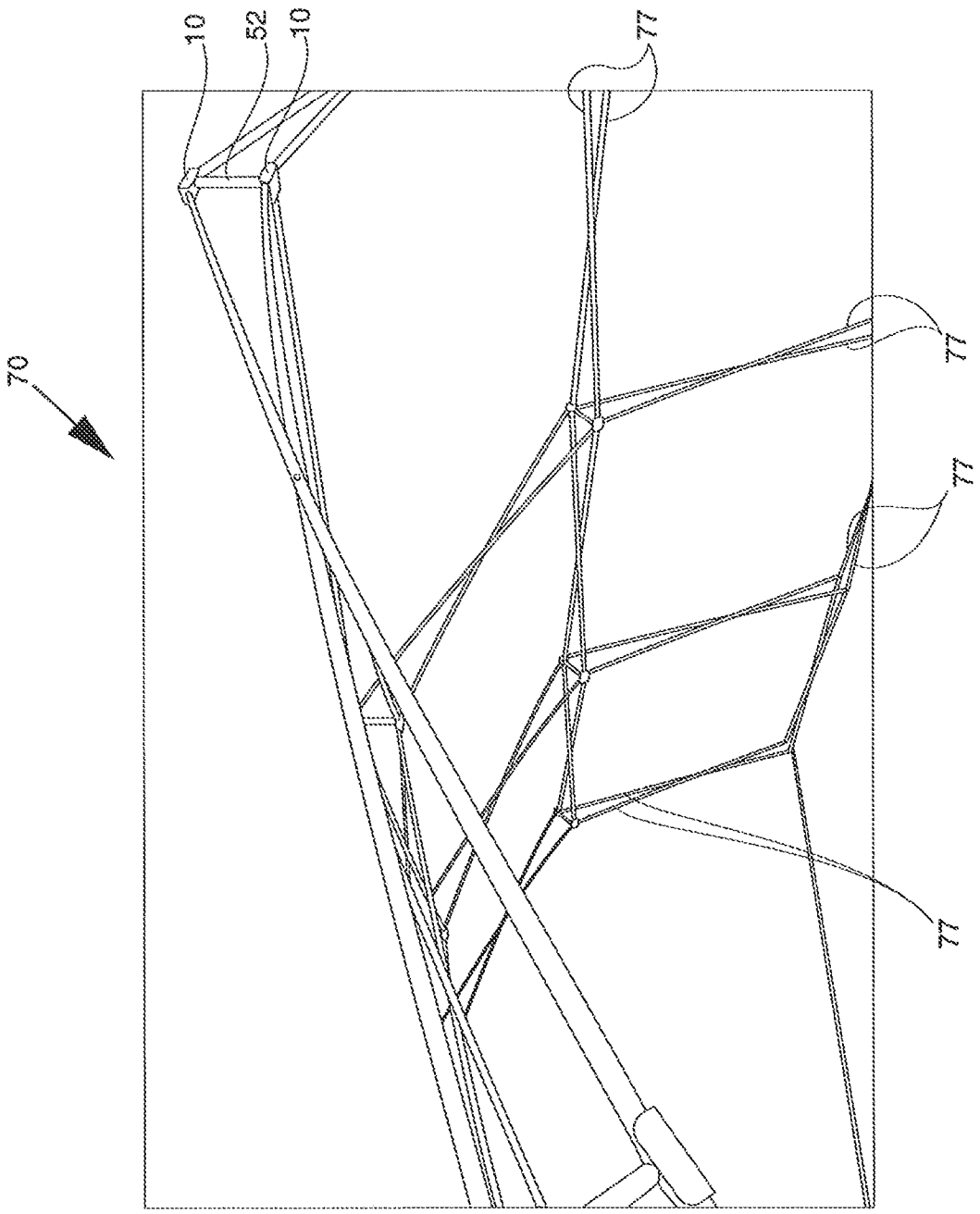


FIG. 13

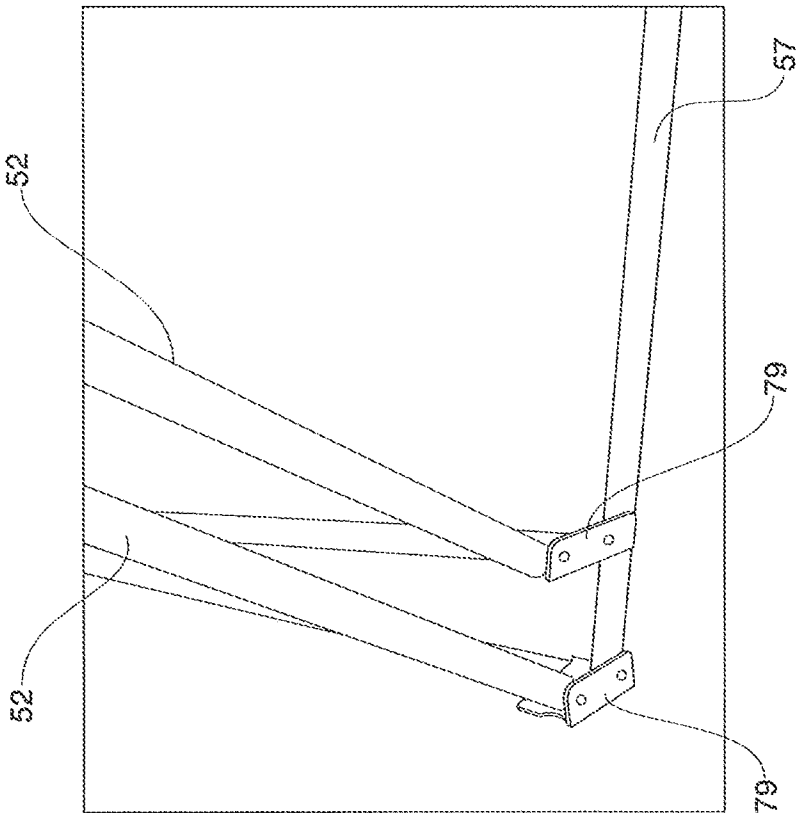


FIG. 14

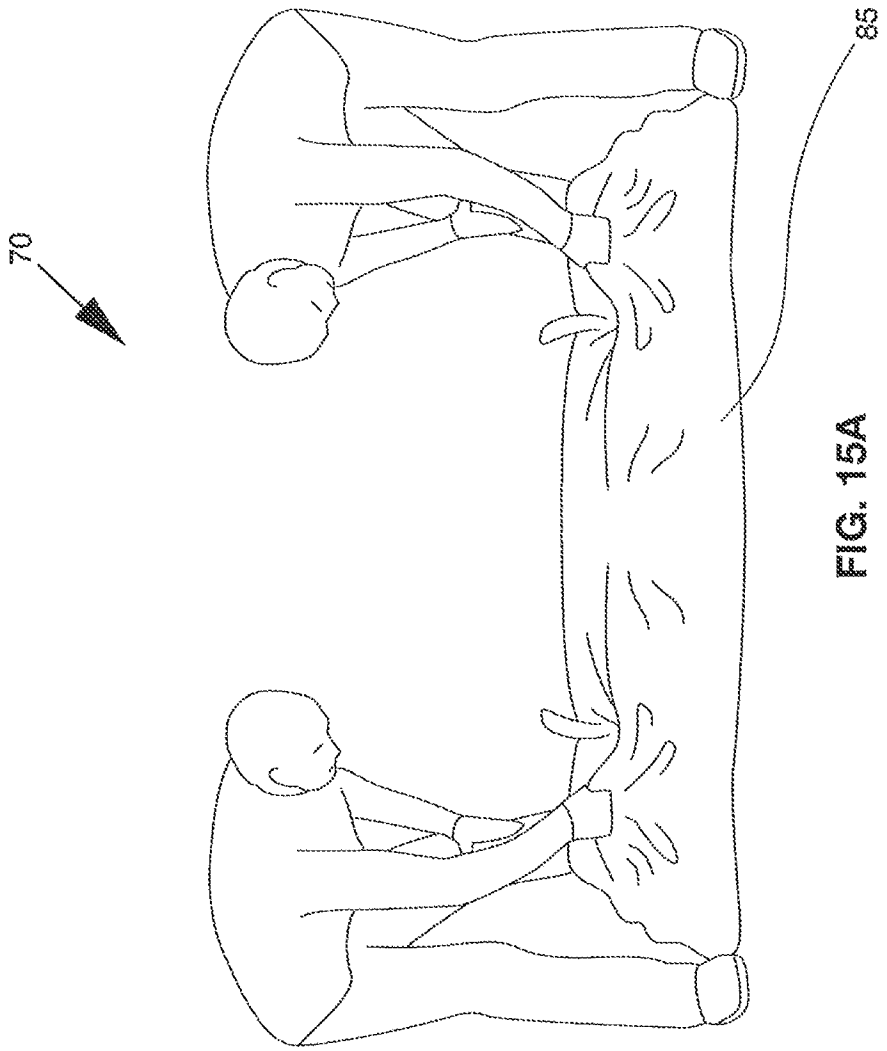


FIG. 15A

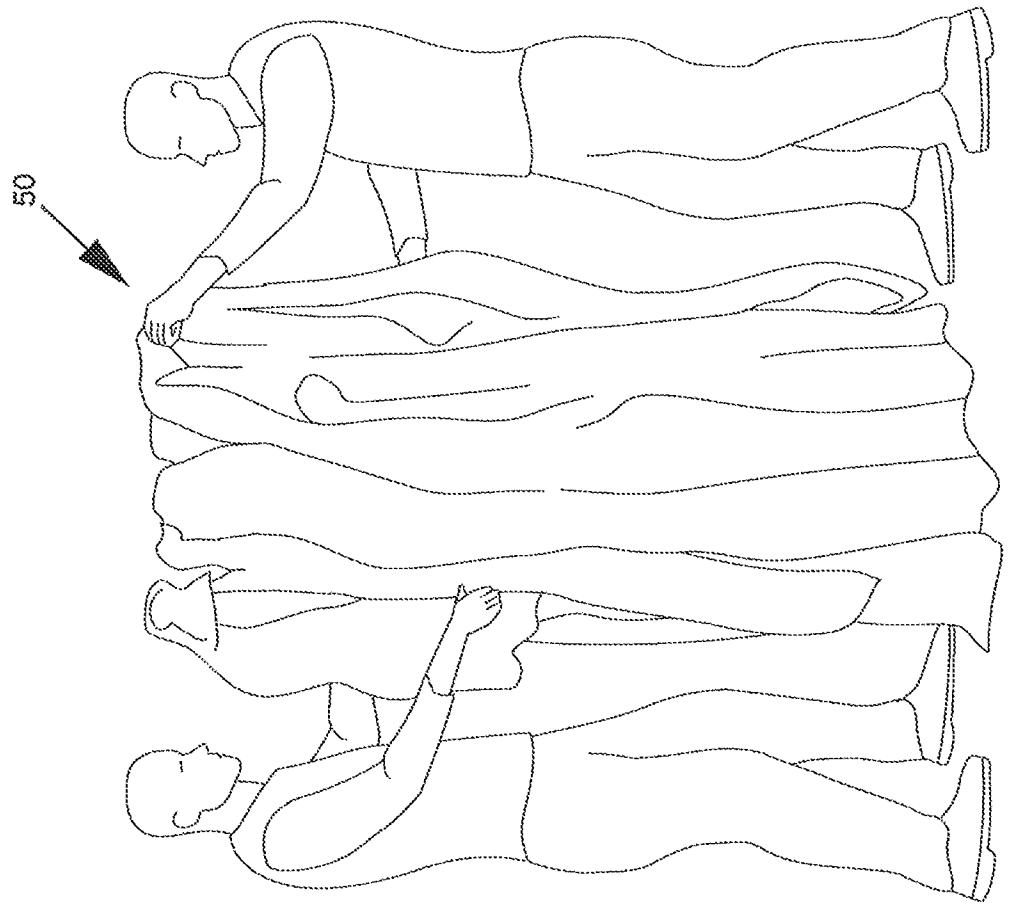


FIG. 15B

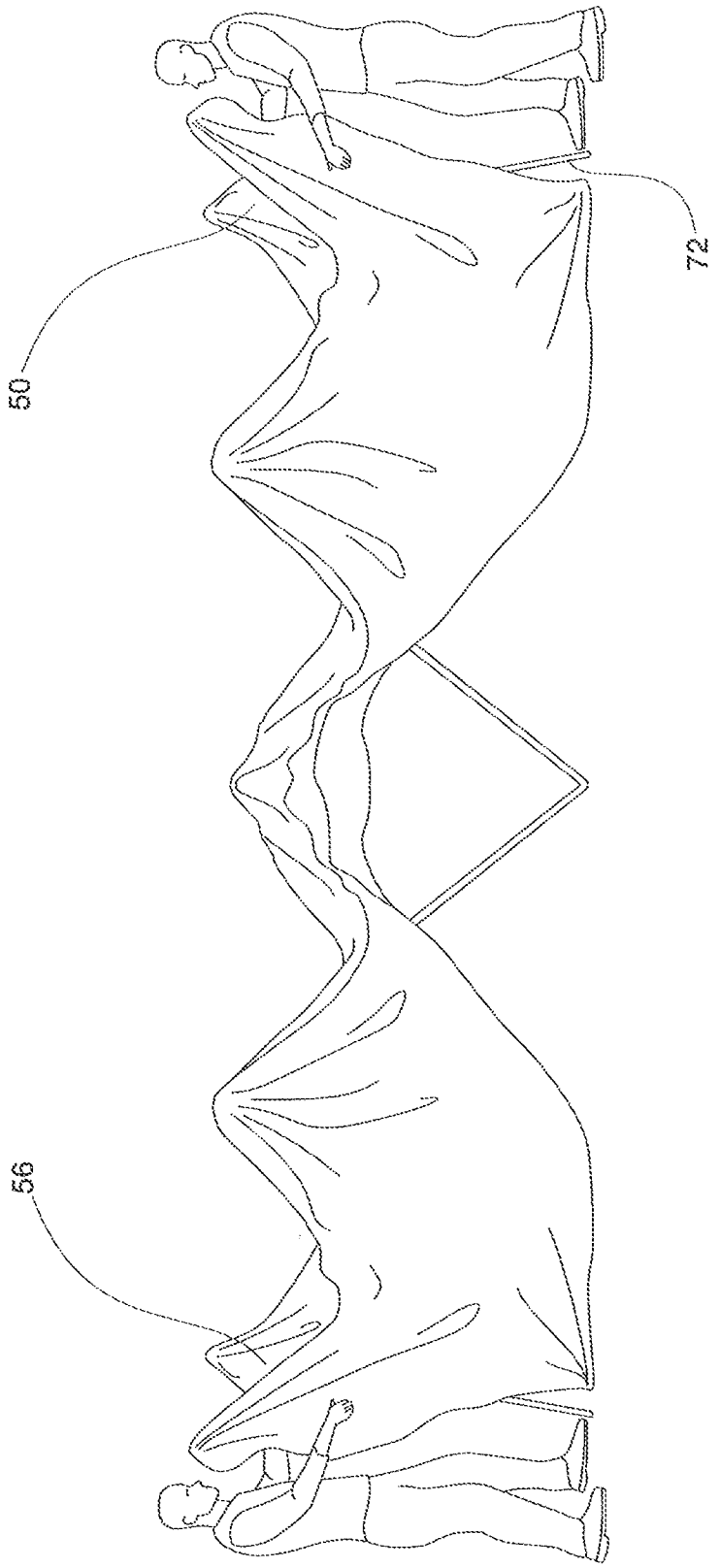


FIG. 15C

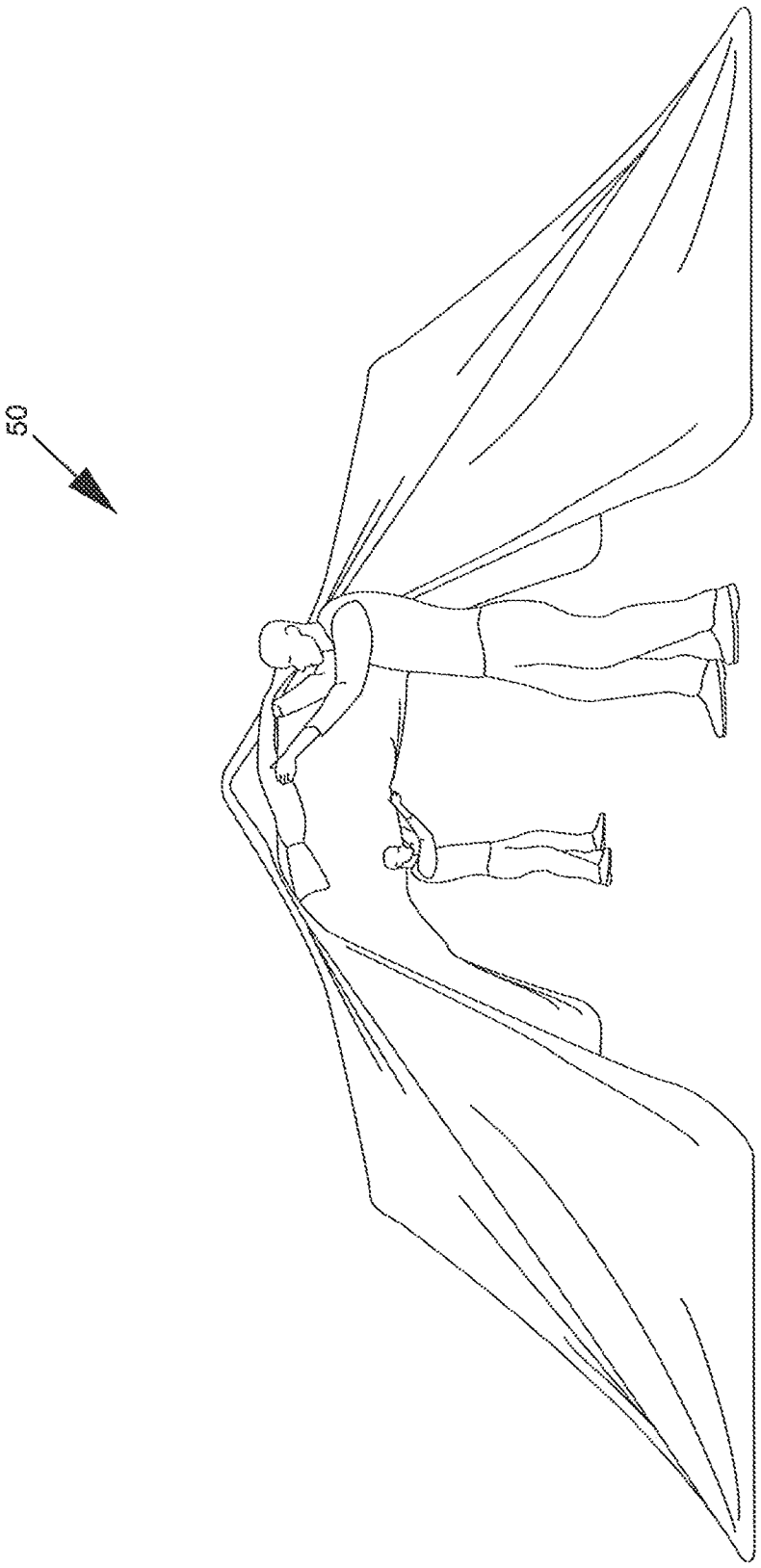


FIG. 15D

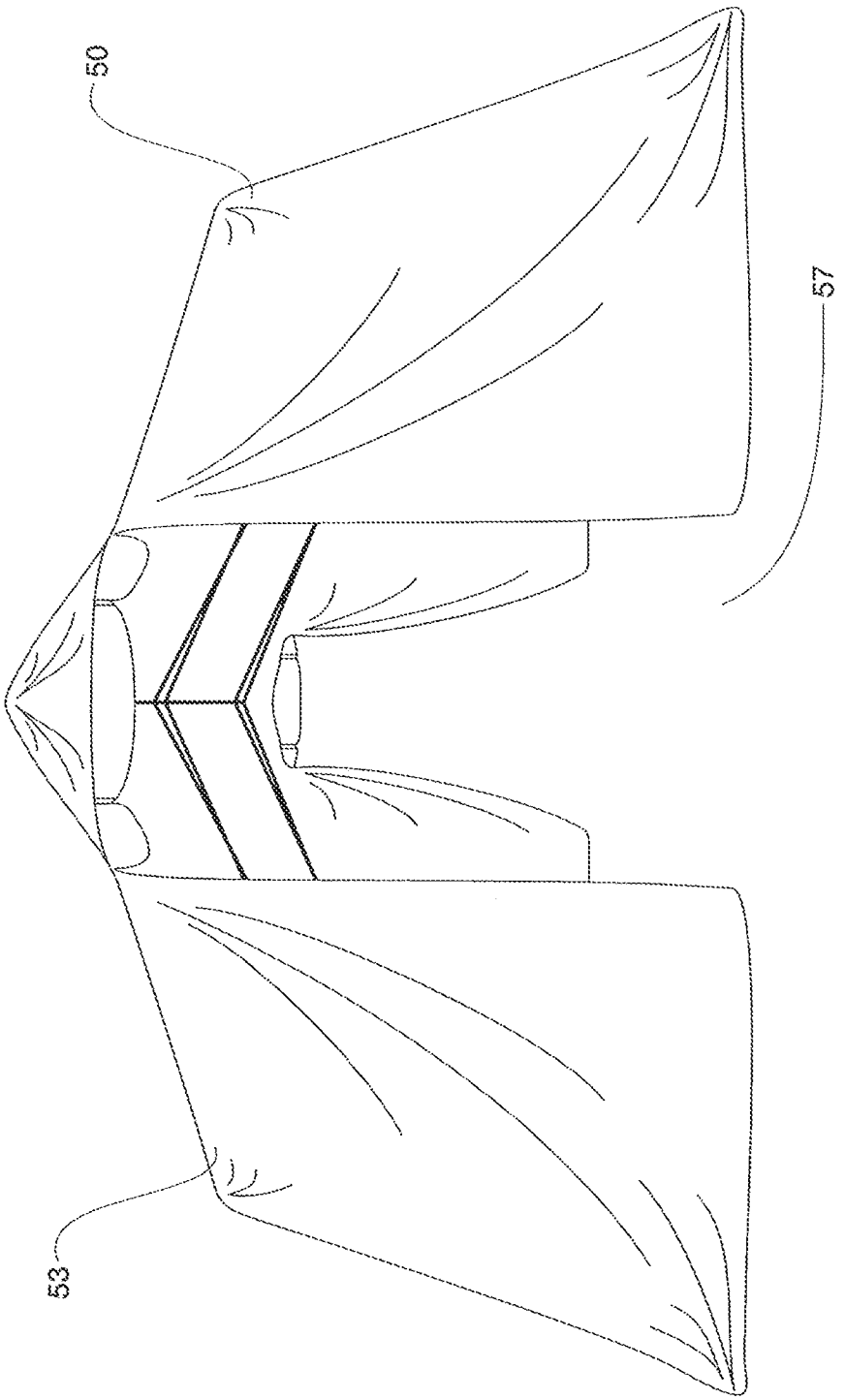


FIG. 15E

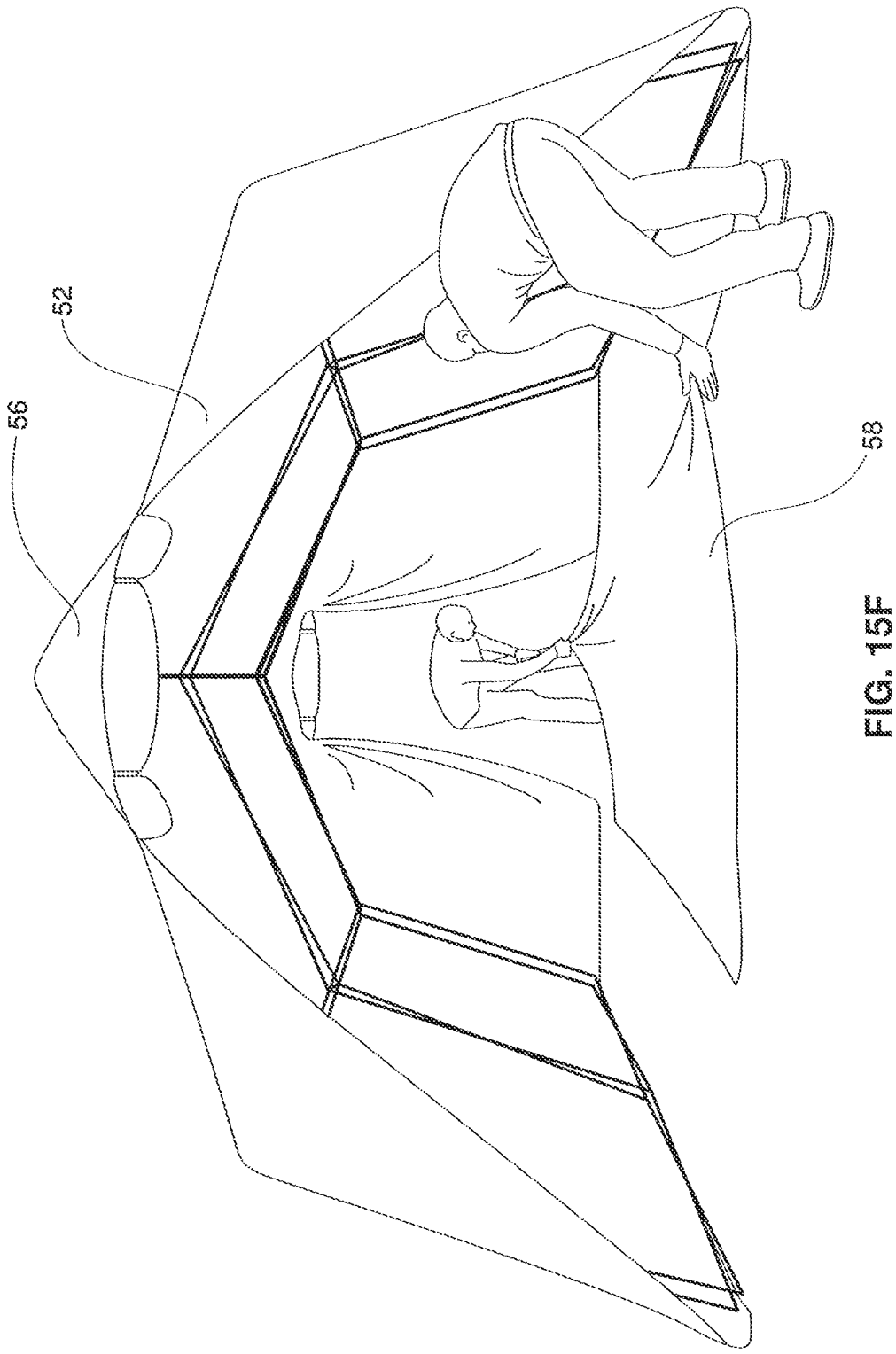


FIG. 15F

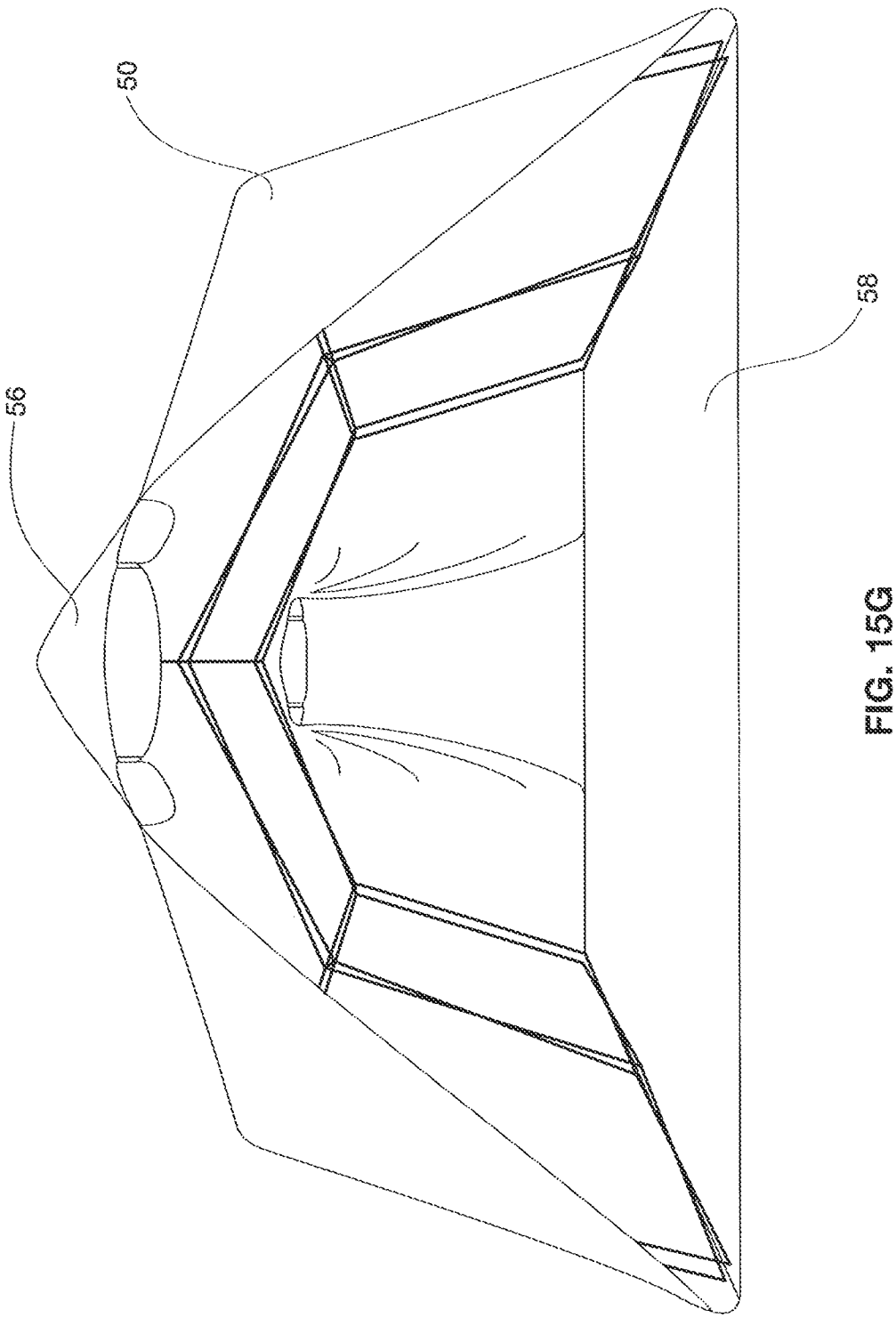


FIG. 15G

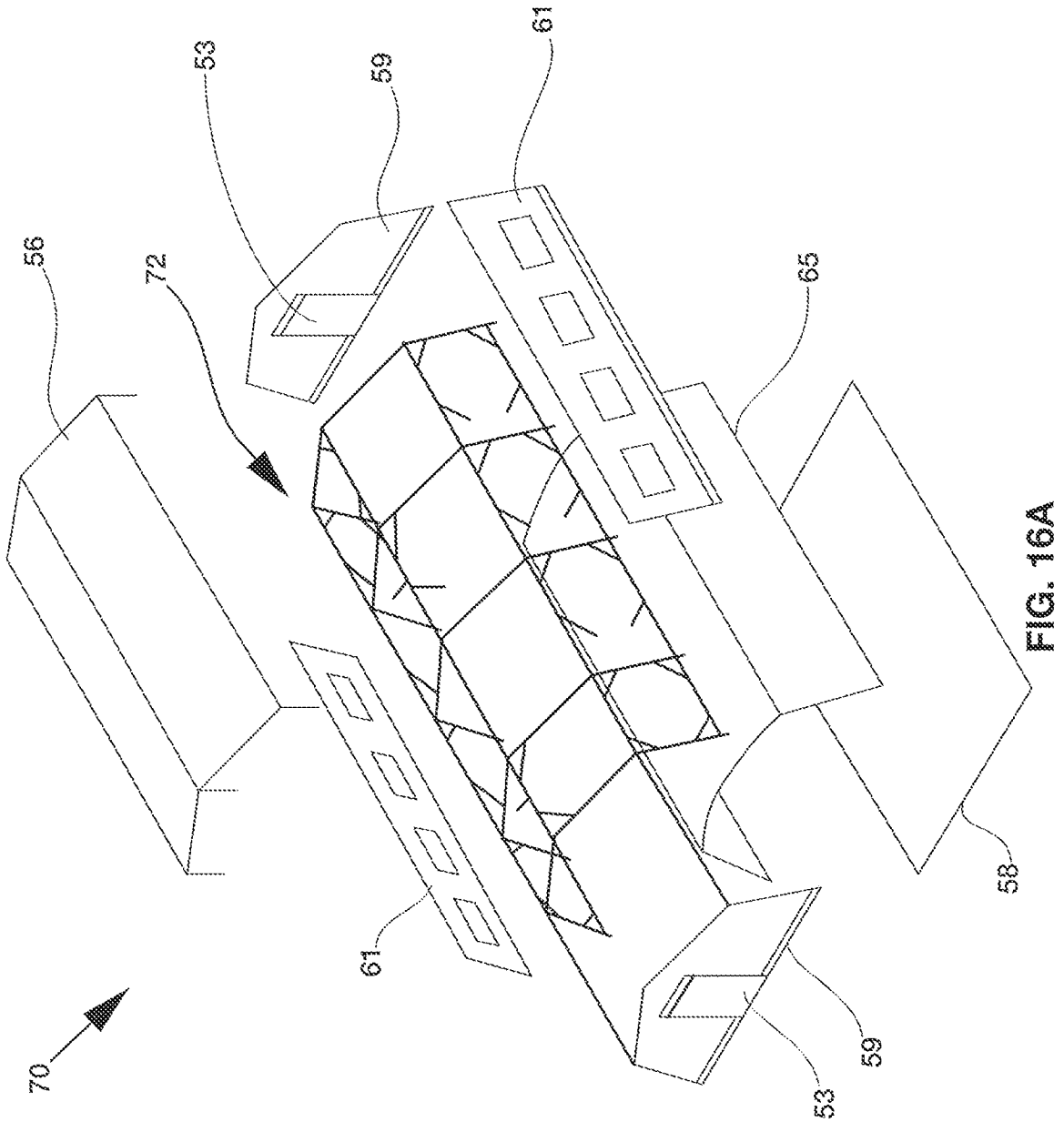


FIG. 16A

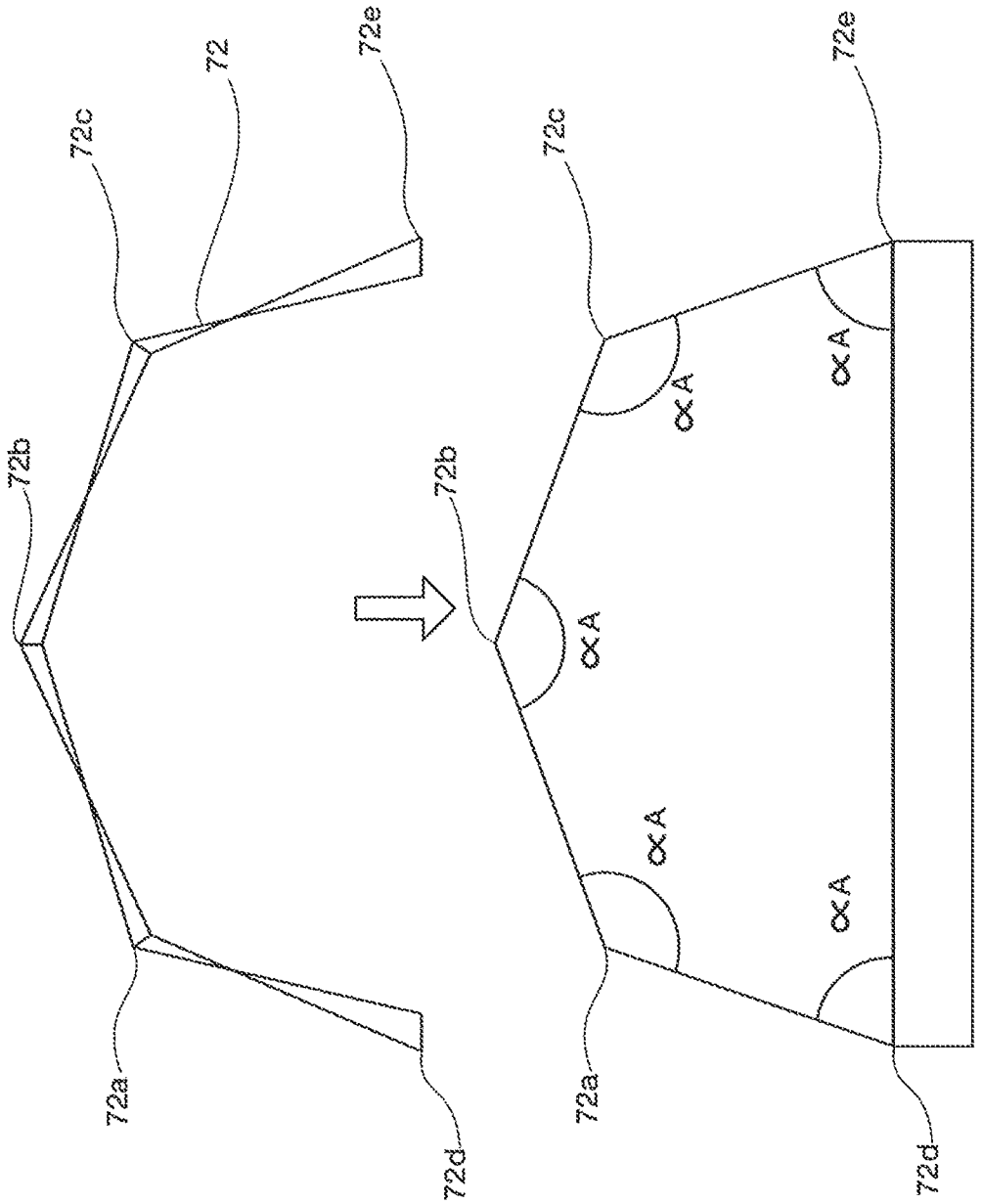


FIG. 16B

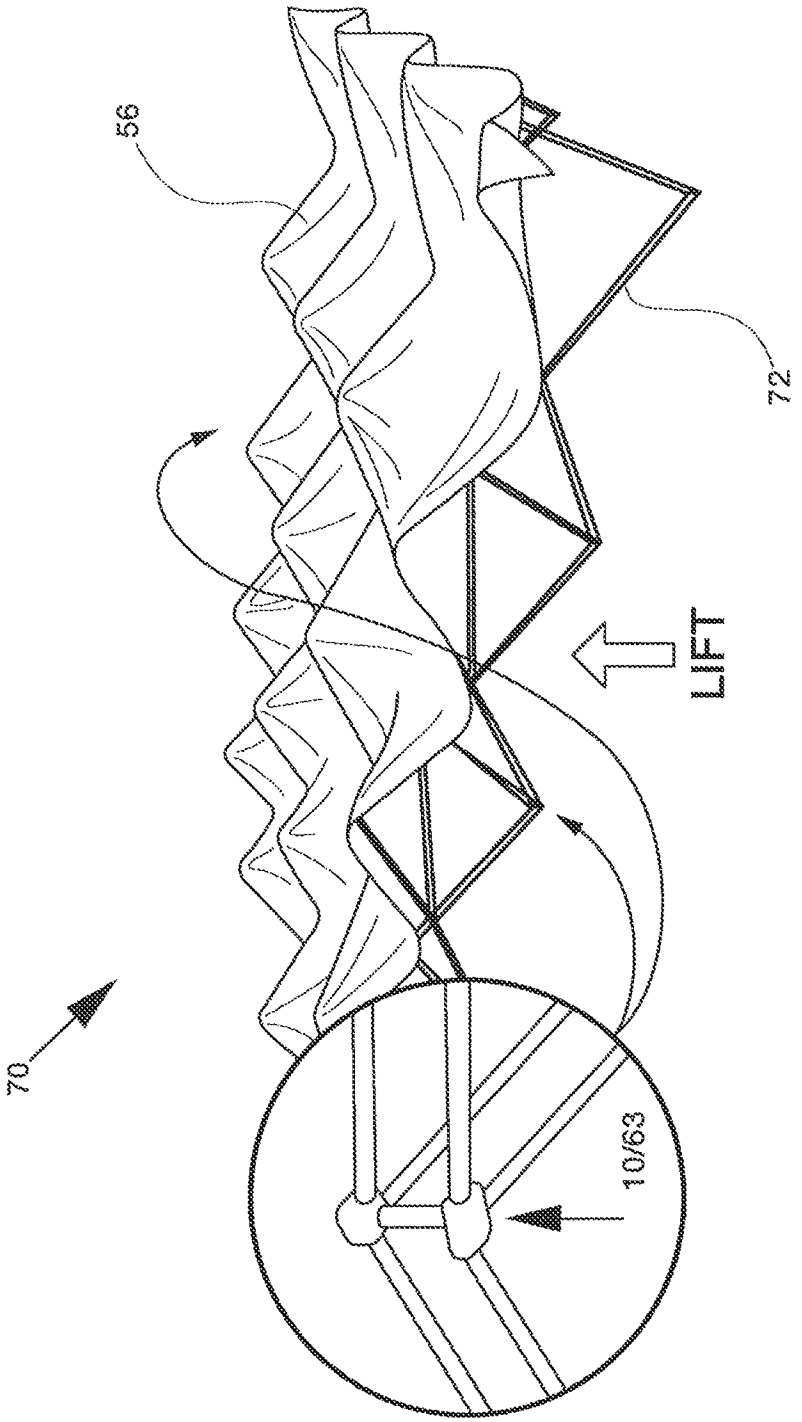


FIG. 17

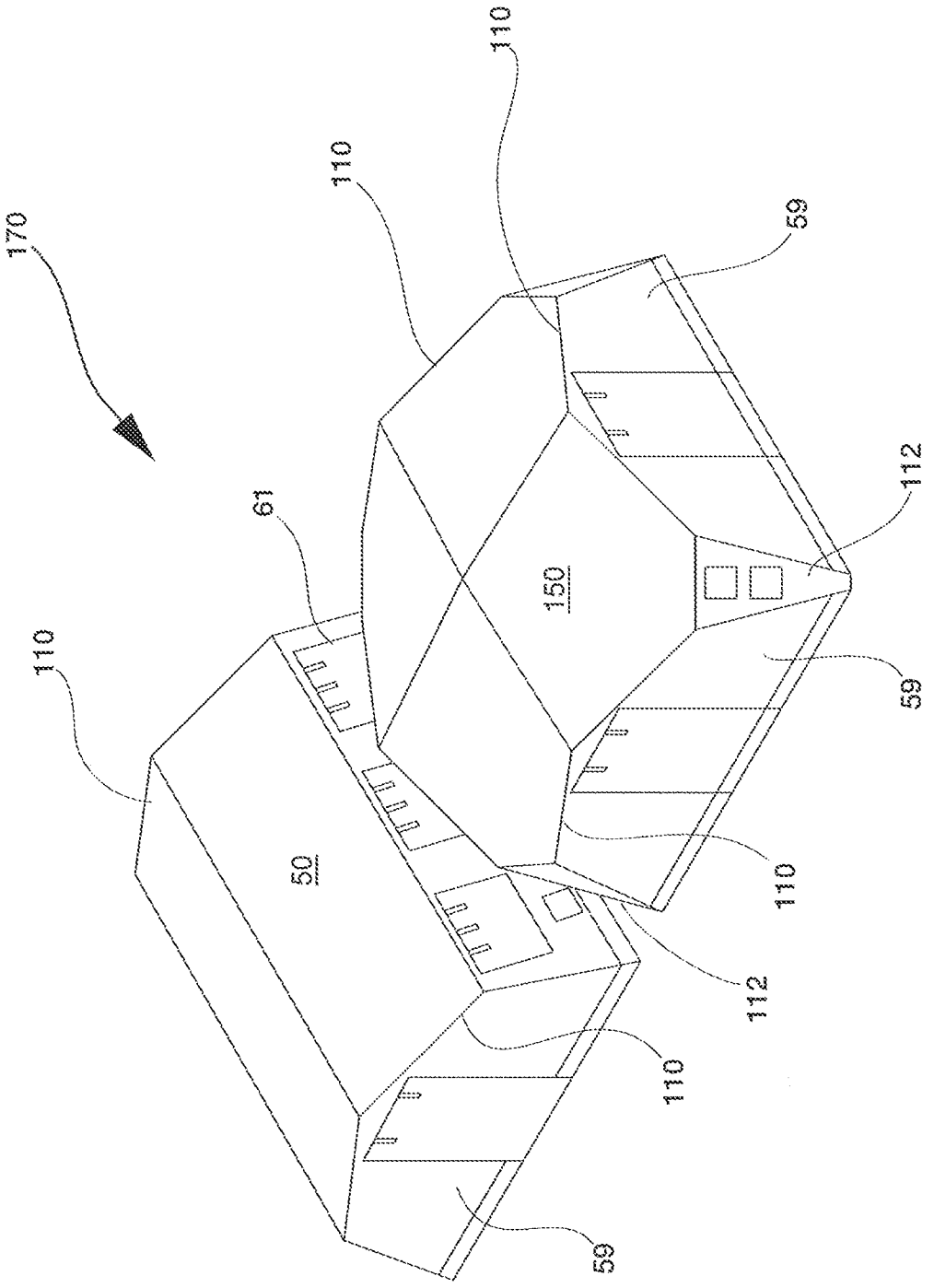


FIG. 18

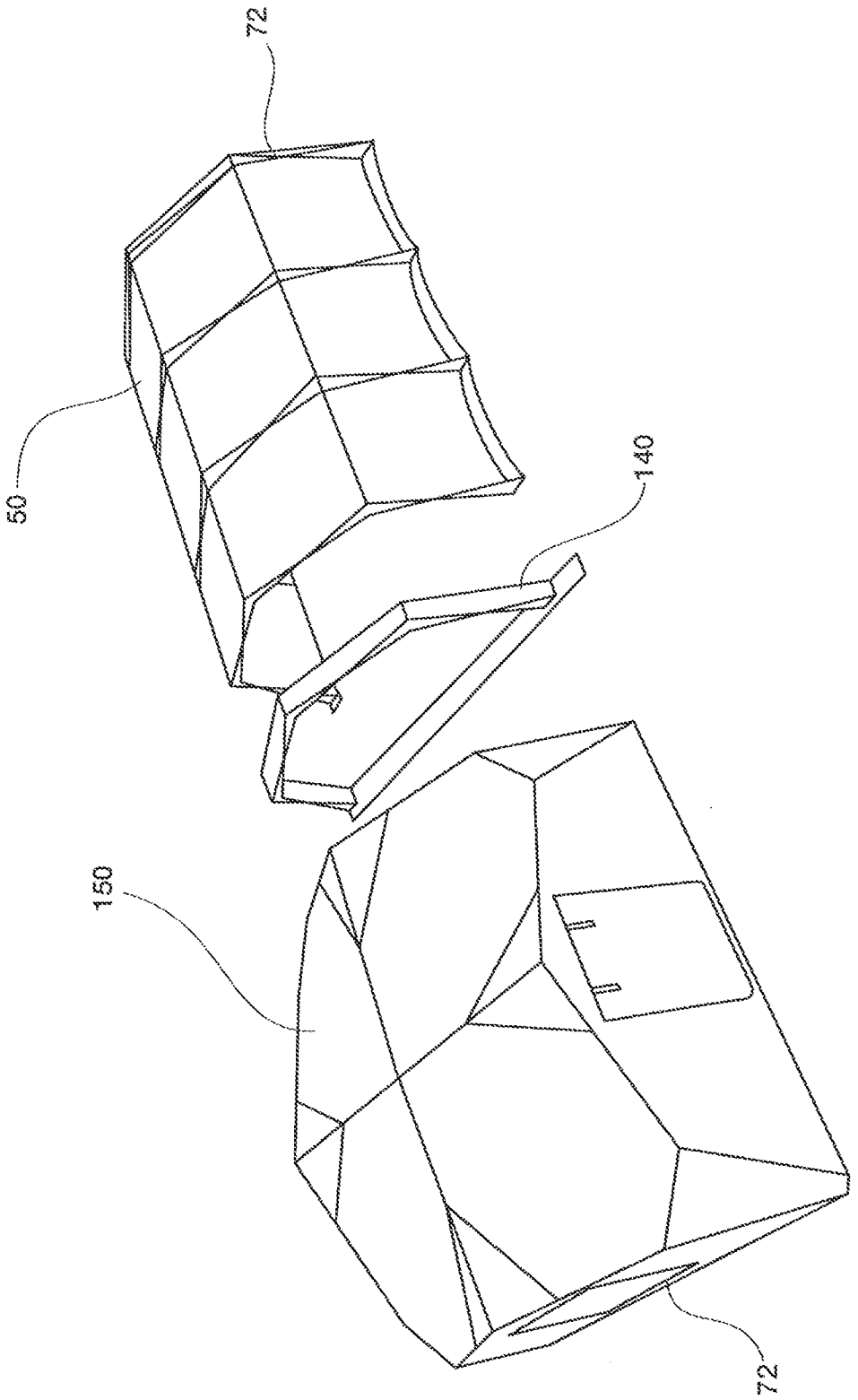


FIG. 19

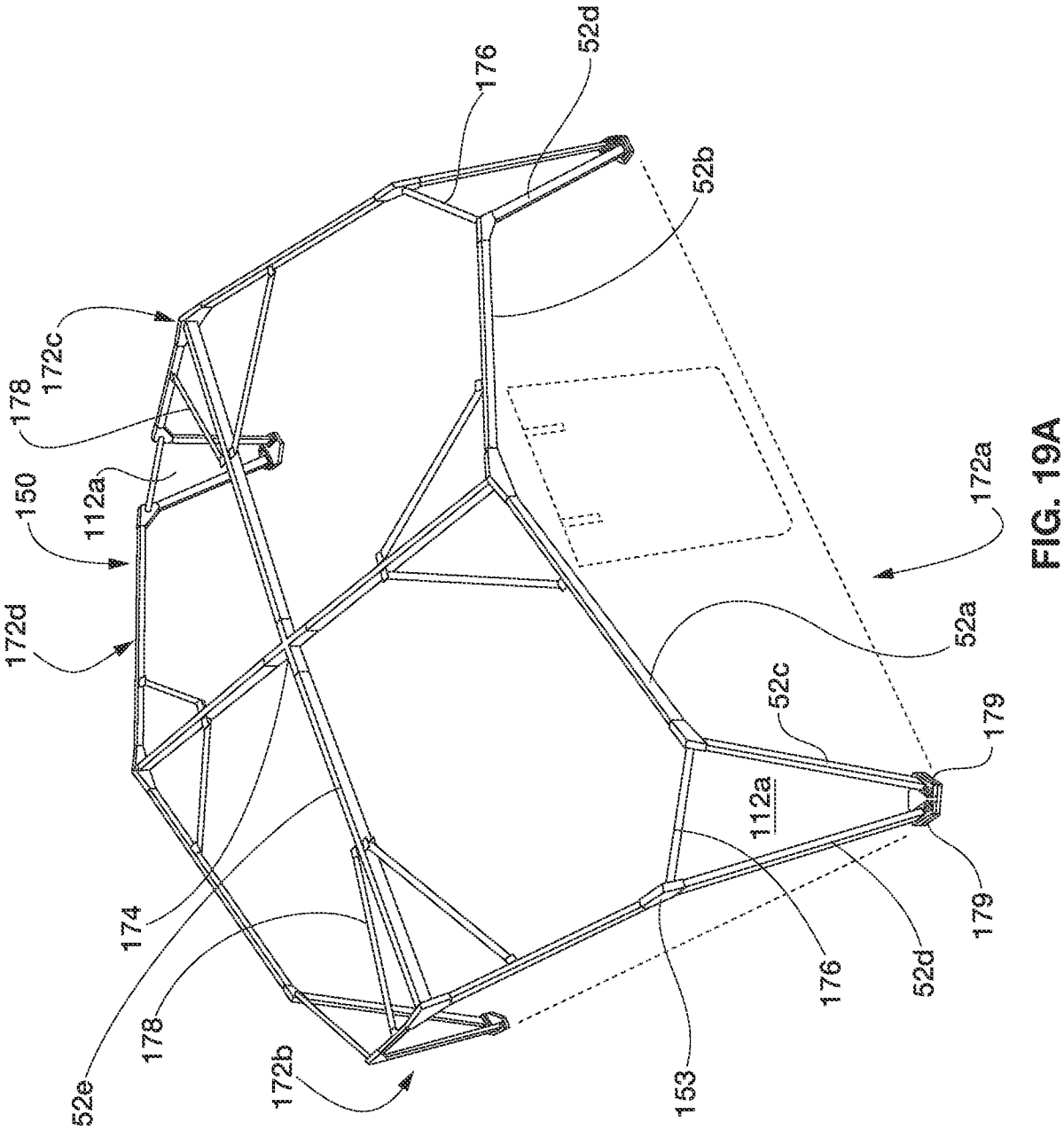

176
52d
52b
172c
178
150
112a
172d
172a
52a
52c
179
112a
174
178
52e
172b
153
176
52d
179

FIG. 19A

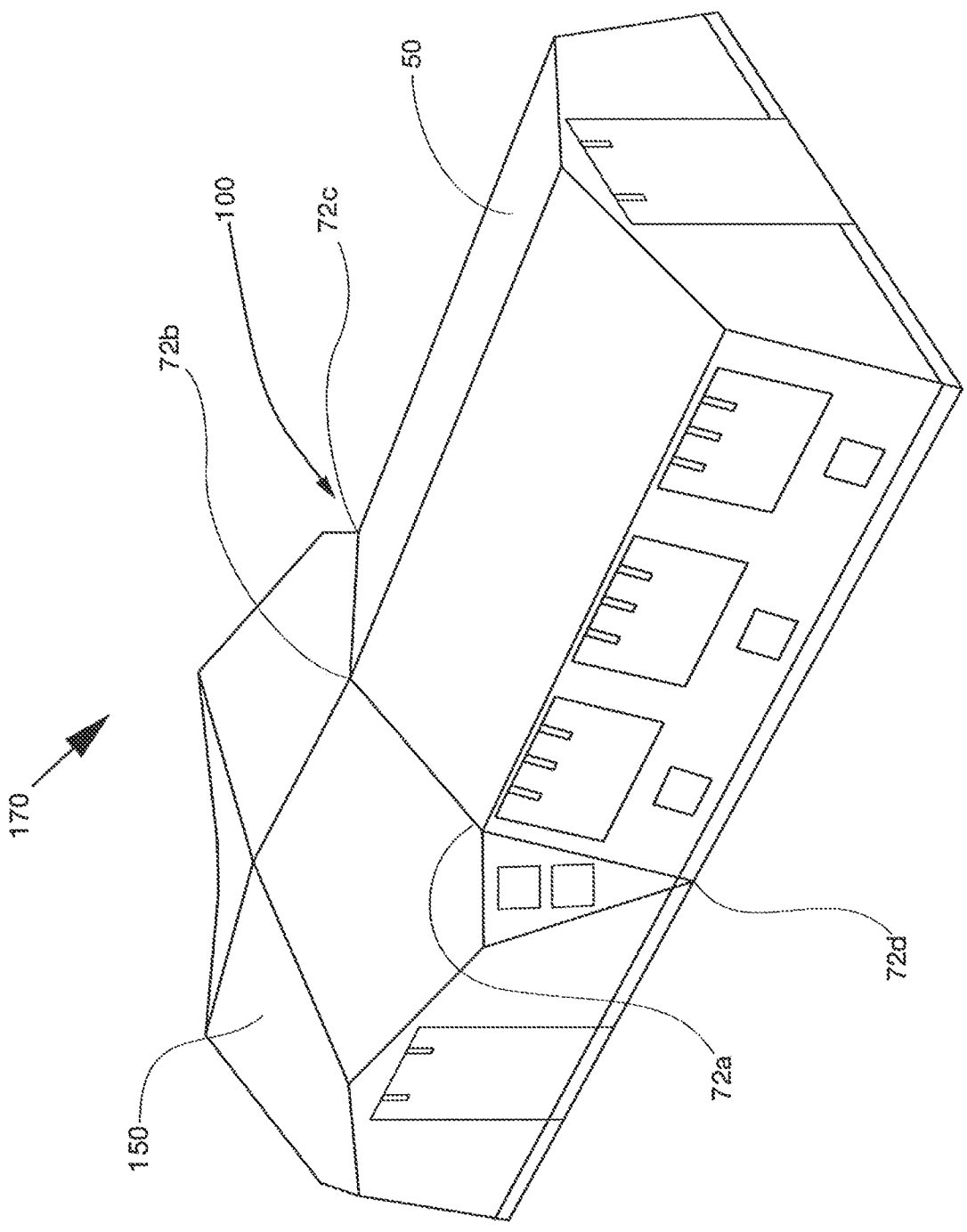


FIG. 20A

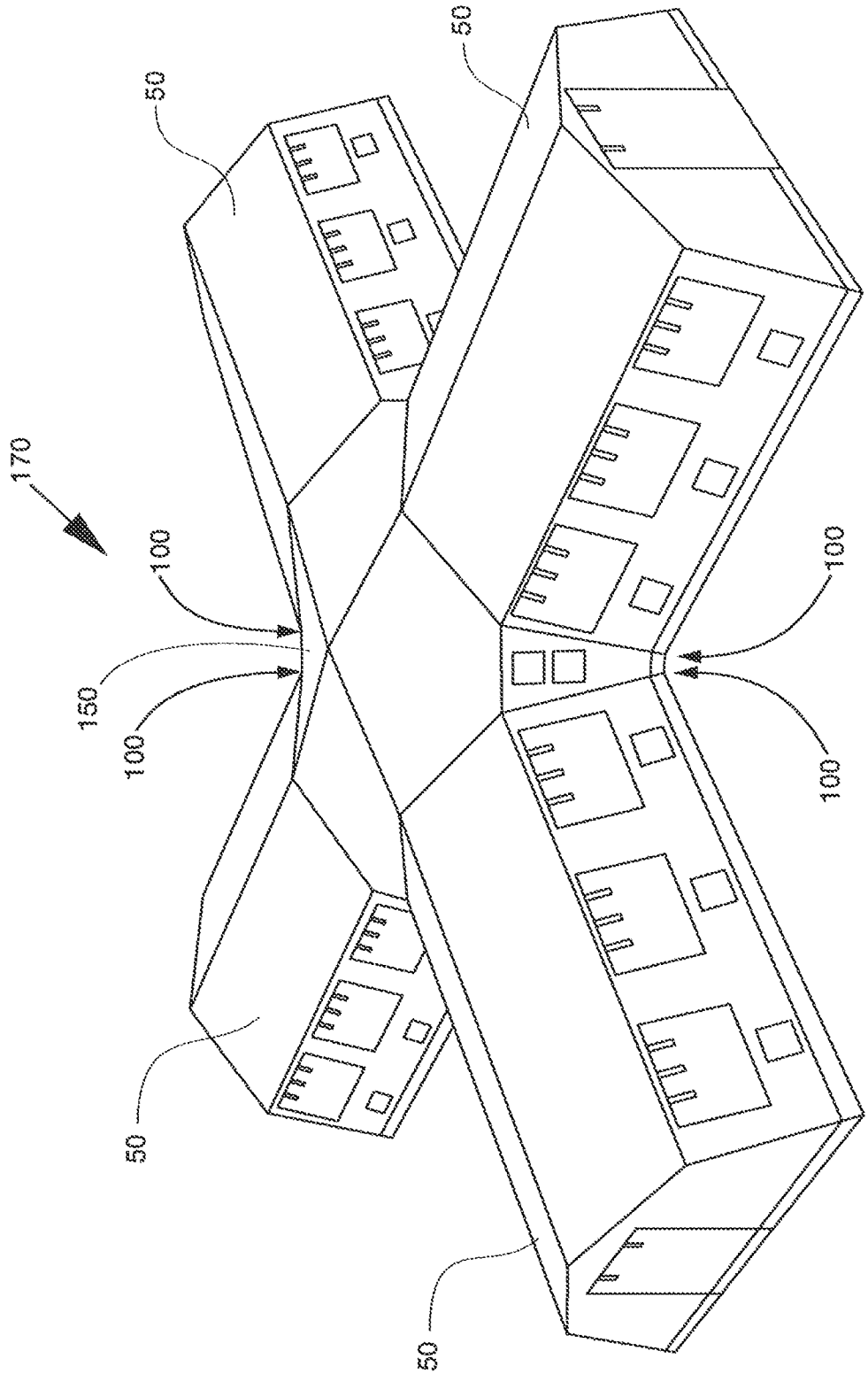


FIG. 20B

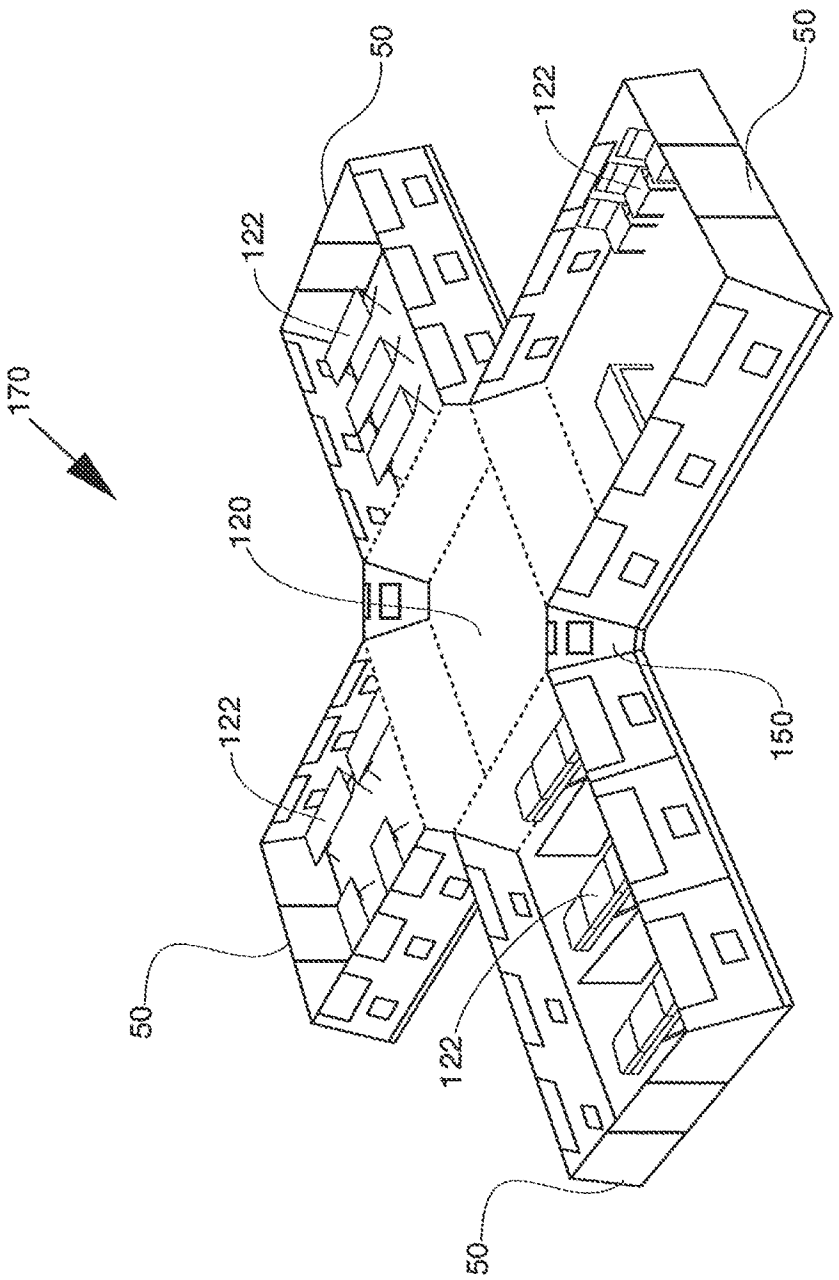


FIG. 20C

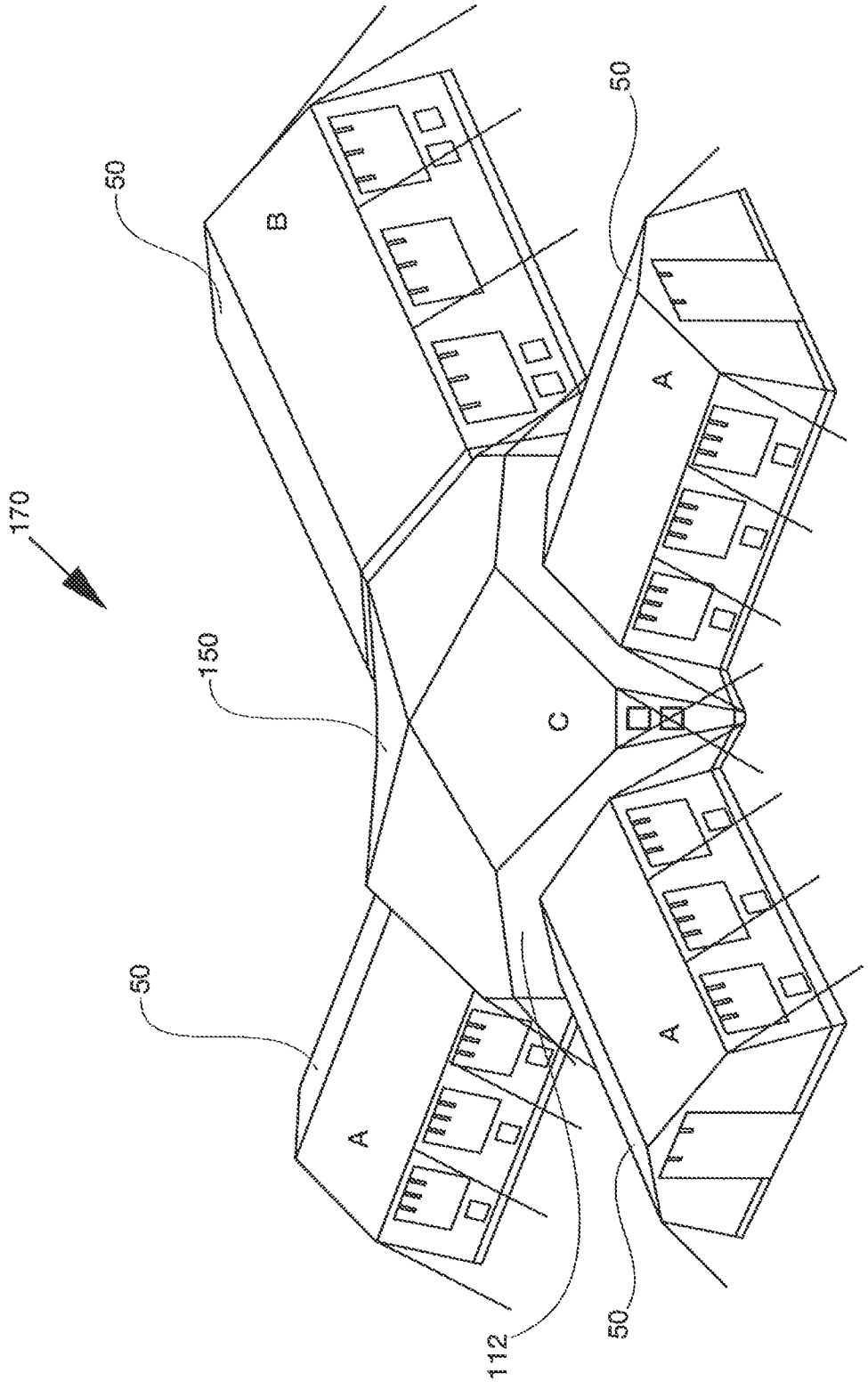


FIG. 20D

Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	SHELTER AND HUB SYSTEM
First Named Inventor/Applicant Name:	Jonathan Urhausen
Filer:	Kelly B. Robinson/Nichol Neal
Attorney Docket Number:	9693-012A-CONB

Filed as Small Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
UTILITY FILING FEE (ELECTRONIC FILING)	4011	1	80	80
UTILITY SEARCH FEE	2111	1	350	350
UTILITY EXAMINATION FEE	2311	1	400	400
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Camel Manufacturing Company, LLC,
Case No. PGR2024-00033; Exhibit 1002

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**830**

Electronic Acknowledgement Receipt

EFS ID:	46393649
Application Number:	17886132
International Application Number:	
Confirmation Number:	8474
Title of Invention:	SHELTER AND HUB SYSTEM
First Named Inventor/Applicant Name:	Jonathan Urhausen
Customer Number:	4678
Filer:	Kelly B. Robinson/Nichol Neal
Filer Authorized By:	Kelly B. Robinson
Attorney Docket Number:	9693-012A-CONB
Receipt Date:	11-AUG-2022
Filing Date:	
Time Stamp:	16:33:47
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$830
RAM confirmation Number	E20228AG34390911
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Camel Manufacturing Company, LLC,
Case No. PGR2024-00033; Exhibit 1002

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet	WebADS.pdf	224453 b2d0cbb035160c32675a3c8a14aa786b0dd10ea8	no	9
Warnings:					
Information:					
2		9693-012A-CONB-Application.pdf	137170 010288ca15cd002ac9f53e965466c60549178fba	yes	24

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Specification	1	20
	Claims	21	23
	Abstract	24	24

Warnings:					
Information:					
3	Oath or Declaration filed	9693-012A-CONB_Declarations.pdf	181062 51673156d5fde7f80c152b1e61182f9bd4545e37	no	3
Warnings:					
Information:					
4	Drawings-only black and white line drawings	9693-012A-CONB_Drawings.pdf	11554980 21feb011ccba371736a8447ef0a128219a95abdb	no	31
Warnings:					
Information:					
5	Fee Worksheet (SB06)	fee-info.pdf	44231 1d5e4ea6406be952f6a012a2def6575d2428cc08	no	2

Warnings:	
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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.