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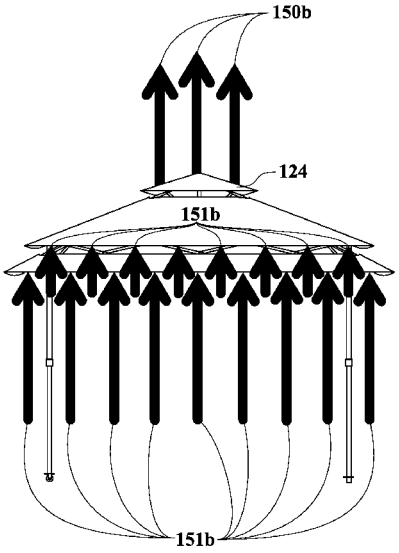
(54) **Title:** ADJUSTABLE-CENTRAL-CANOPY ADJUSTABLE-RING-CANOPY ADJUSTABLE-SURROUNDING-AWNING SINGLE-CENTRAL-INNERSURFACE-SQUARE-LOCK POPUP, HAVING POST-CENTERING CLAMPS, TICK-PREVENTING DOWNWARD TEETH, WATER-DISCHARGING GROOVES, CENTRAL-INNERSURFACE-SQUARE-LOCKING WIND-AND-SMOKE-REDIRECTING ADJUSTABLE-CENTRAL-CANOPY SYSTEM, AND MULTI-FUNCTION HOOK-ROPE-STAKE-PULLEY-WHEEL SYSTEM

FIG. 19D



(57) **Abstract:** A multiple-adjustable-canopy-and-awning single-lock popup comprises: an adjustable ring canopy and an adjustable central canopy and an adjustable surrounding awning each being able to be adjusted up and down, a central intersector, foldable top and comer and side trusses each bolted to the central intersector, four upper posts, four upper comer intersectors each bolted to the top and side trusses, four lower comer intersectors and four sleeves each slid on the four upper posts, post-centering clamps and tick-preventing downward teeth and water-discharging grooves each respectively molded to the four sleeves, four lower posts inserted inside the four upper posts, a central square post attached to the central intersector, central-innersurface-locking double nipples attached to the central square post, a central-innersurface-locking adjustable ring adjustably and slidably locked on and unlocked from the central square post for locking and unlocking the central square post and the central-innersurface-locking double nipples to and from the central-innersurface-locking adjustable ring and the foldable adjustable central trusses on the same plane to prevent the popup from radially twisting clockwise or counterclockwise and to lock and unlock the popup after the popup is folded or unfolded, hooks respectively welded or molded to the four lower posts, ropes hooked on at least one of the four lower posts or the hooks, and pulley-wheels each rotatably attached to the hooks for functioning as pulleys and wheels to wrap the ropes thereon to tie the four lower posts together and to roll the popup along the ground.

ADJUSTABLE-CENTRAL-CANOPY ADJUSTABLE-RING-CANOPY ADJUSTABLE-SURROUNDING-AWNING SINGLE-CENTRAL-INNERSURFACE-SQUARE-LOCK POPUP, HAVING POST-CENTERING CLAMPS, TICK-PREVENTING DOWNWARD TEETH, WATER-DISCHARGING GROOVES, CENTRAL-INNERSURFACE-SQUARE-LOCKING WIND-AND-SMOKE-REDIRECTING ADJUSTABLE-CENTRAL-CANOPY SYSTEM, AND MULTI-FUNCTION HOOK-ROPE-STAKE-PULLEY-WHEEL SYSTEM

1. FIELD OF THE INVENTION

The present invention relates to **a collapsible popup**, which is cheap to produce, is easy to ship as one unit, requires no assembly, and can be quickly and easily be unfolded.

Particularly, the present invention relates to **an adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding-awning single-central-innersurface-square-lock popup**, comprises:

1) **Post-centering tick-preventing water-discharging wind-and-smoke-redirecting adjustable-ring-canopy system,**
2) **Central-innersurface-locking wind-and-smoke-redirecting adjustable-central-canopy system,**
3) **Wind-and-smoke-redirecting adjustable-surrounding-awning system, and**
4) **Multi-function hook-rope-stake-pulley-wheel system.**

2. DESCRIPTION OF THE PRIOR ART

A number of collapsible popups have been introduced.

U.S. Patent No. 2,151,908, issued 1939-03-28, to Max E. Gottlieb, relates to chapel tents and particularly to the collapsible of folding type which is used at cemeteries during funeral services. The present invention provides a shelter tent suitable for the purposes mentioned which will fold up compactly to as to be easily transported and yet be sturdy

enough to withstand all sorts of inclement weather without the aid of auxiliary and troublesome anchors.

U.S. Patent No. 2,265,479, issued 1941-12-09, to Dwight Goodman, relates primarily to chapel tents, but is also obviously useful in temporary shelters for concessions, and as a display tent or the like. An object of the invention resides in the provision of a tent frame which may be readily folded in a compact manner for transportation, and yet which is sufficiently strong to remain in set-up condition despite all sorts of inclement weather.

U.S. Patent No. 3,085,586, issued 1963-04-16, to Elon D. McDonough, refers to a portable structure of the type employing a foldable frame and a flexible covering for the frame. An object of this invention is to provide a foldable structure which is adapted to form an enclosure for large areas, which structure is of economical and light weight construction and which can be readily collapsed and disassembled for compact storage and transportation.

U.S. Patent No. 3,199,518, issued 1965-08-10, to Herman A. Glidewell, describes a collapsible and foldable frame which may be employed as a shelter when suitable covering material is placed thereover. The device is primarily intended as a collapsible frame over which camouflage material can be placed to provide a hunting blind, but could, of course, be employed as a frame over which any desired covering material (such as tarpaulin) could be placed to provide protection against the weather.

U.S. Patent No. 4,779,635, issued 1988-10-25, to James P. Lynch, demonstrates a canopy structure which is provided and includes a framework unit and a flexible covering. The framework unit is formed by a plurality of upright corner members and a plurality of roof

support members that are pivotally connected at the top ends of the corner members and, in an erected position, extend upwardly and inwardly to a central apex where they are pivotally connected to one another.

U.S. Patent No. 4,885,891, issued 1989-12-12, to James P. Lynch, relates to an extendible scissors truss such as may be utilized in a collapsible canopy structure wherein the extendible scissors truss has members pivotally connected to form truss cells. The reinforcement member has first and second end portions joined by a linking portion to form a Z-like configuration.

U.S. Patent No. 5,035,253, issued 1991-07-30, to Allan D. Bortles, demonstrates a rain runoff awning for collecting runoff from a tent canopy. Fabric is stretched between and secured to outwardly extending arms which are attached to the canopy frame. The fabric forms a gutter or trough along an edge of the canopy for receiving runoff from the canopy and directing the runoff away from entrance and exit areas of the canopy.

U.S. Patent No. 5,244,001, issued 1993-09-14, to James P. Lynch, describes an expandable framework structure which can be folded for storage and expanded for use, especially as a canopy when a covering is placed on top of the framework. The framework includes a plurality of upright supports and a plurality of edge scissor assemblies that interconnect adjacent ones of the upright supports.

U.S. Patent No. 5,511,572, issued 1996-04-30, to Mark C. Carter, describes a collapsible shelter which includes a truss and canopy framework that permits a flexible, collapsible canopy to be moved between a raised position and a lowered position. The collapsible shelter

includes at least three legs supporting flexible poles removably mounted to the tops of the legs and forming the framework of the canopy. X-shaped truss pairs of link members are connected to each of the legs on each side of the shelter between adjacent legs.

U.S. Patent No. 5,638,853, issued 1997-06-17, to Tony M. L. Tsai, demonstrates a tent structure which includes four poles interconnected by four scissors-type linkages forming a square structure and four intermediate pivot connecting members. Each pole comprises a fixed connector and a sliding connector.

U.S. Patent No. 6,141,934, issued 2000-11-07, to Theodore R. Zeigler, depicts a folding frame system which includes a roof assembly including at least three pivotably attached strut pairs, adjacent pairs of the at least three pivotably attached strut pairs defining at least three corners of the roof assembly. The roof assembly is movable between a roof assembly closed position in which struts of the at least three strut pairs are disposed parallel to each other and a roof assembly open position in which struts of the at least three strut pairs are locked in non-parallel positions and ends of the struts of each strut pair of the at least three strut pairs define a rectangle.

U.S. Patent No. 6,283,136, issued 2001-09-04, to Fengchun Chen, refers to a collapsible tent which comprises top connecting means at the top of the tent; a plurality of upright legs; a slider slideably received on each upright leg; upper roof support bars pivotally connected to the top connecting means; lower roof support bars which each are connected at one end to its respective upper roof support bar and at the other end to a top of its respective upright leg.

U.S. Patent No. 7,178,542, issued 2007-02-20, to Mark C. Carter, demonstrates a lightweight erectable canopy shelters which include a plurality of legs connected together by an extendible perimeter assembly of link members. In one embodiment, the roof structure is formed by a pole members pivotally mounted to the upper ends of the legs so as to extend across the shelter, and movable between a lowered position and a raised, upwardly arching position.

U.S. Patent No. 7,836,907, issued 2010-11-23, to Mark C. Carter, refers to a quickly erectable dome shelter which includes an extendible perimeter truss assembly with link members connected between adjacent legs, a central truss assembly of link members, and a roof framework, including pairs of curved upper and lower peak truss members, that is movable between a lowered, collapsed configuration and a raised, upwardly arching position.

U.S. Patent No. 8,418,711, issued 2013-04-16, to Bumjun Park, demonstrates a collapsible canopy support which includes beams for supporting a canopy with each beam having a plurality of elongated beam segments coupled together to form the beam. A segment coupler provides for pivotally coupling a first beam segment to a second beam segment. A segment locking assembly is adapted for selectively securing the first beam segment relative to the second beam segment.

U.S. Patent No. 8,776,815, issued 2014-07-15, to Bumjun Park, relates to a collapsible shelter assembly which includes legs, a truss system, a cover, cover supporting rods and mounting brackets. Each of the legs has an upper and a lower end. The truss system is configured to link each pair of legs together and define a base perimeter.

U.S. Patent No. 9,528,292, issued 2016-12-27, to Jack B. Lovley, II, refers to a canopy which includes a frame assembly having a perimeter frame portion, a central frame portion and multiple legs. The frame assembly also includes one or more overhang frame portions, each of which can include a main overhang frame member and a strut. Each overhang frame portion can extend diagonally from the associated corner of the frame assembly.

U.S. Patent No. 9,556,639, issued 2017-01-31, to David Lewis Hunt, refers to a portable shelter framing system which is disclosed herein. The portable shelter framing system includes a plurality of corner support members; a plurality of crossbeam members, each of the crossbeam members configured to be connected between a pair of the plurality of corner support members without the use of tools.

U.S. Patent No. 9,683,387, issued 2017-06-20, to Jack B Lovley, II, relates to a canopy shelter link point for increased structural integrity particularly when subject to bending forces about the link point. The canopy shelter link point can include an increased overlap distance between two cross members, reduced spacing between adjacent cross members, and/or extension features located about an end of the cross members to reduce the misalignment angle between two cross members.

U.S. Patent No. D670003, issued 2012-10-30, to Jack B Lovley, II, depicts an ornamental design for a canopy.

U.S. Patent No. D785201, issued 2017-04-25, to Ellen Hassman, depicts an ornamental design for a gazebo canopy.

U.S. Publication No. 20060266401, published 2006-11-30, to Weidan Wu, relates to a tarpaulin shelter with collapsible doorframes, including doorframes, the lower end of which is connected to the base and the upper end is connected with corner joint and cross beam, characterized in that the doorframe includes at least three upright poles, in which at least a set of x-scissor member are arranged between the middle upright pole and each side upright pole, said scissor is composed of two cross rods of which the middle portions are mutually hinged together.

U.S. Publication No. 20110308559, published 2011-12-22, to Oliver Ma, relates to a shelter that includes a slider and a strut mechanism mounted on support posts of the shelter that automatically actuate and extend from the side of the support posts when the shelter is expanded from its collapsed state. The strut mechanism provides support for an eave that extends outside from all or a portion of the perimeter of the shelter defined by the corners of the support posts.

DISADVANTAGES OF THE PRIOR ART

The prior art have failed to solve many problems associated with collapsible popup, as follows:

1) No prior art mention or disclose any collapsible popup, having

adjustable ring canopy 102,

adjustable central canopy 124, **and**

adjustable surrounding awning 135.

Therefore, the prior art of collapsible popup:

a) Can not provide shade to occupants,

to prevent sunburn;

b) Can not be adjusted up and down to increase airflow into and out of the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup,

to keep occupants cool;

c) Can not help with airflow out of the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup,

to assist in smoke exiting the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup; and

d) Can not provide rain protection,

to keep occupants dry.

2) No prior art mention or disclose any collapsible popup, having **central-innersurface-locking adjustable ring 129**.

Therefore, the prior art of collapsible popup:

a) Can not lock central square post **125** to the rest of the canopy structure,

to increase overall strength of the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup;

b) Can not lock canopy together,

to prevent the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup from collapsing;

c) Can not decrease the total number of locking points,

to make setup easier; and

d) Can not lock four post-height-adjusting nipples **120** and central square post **125 on the same plane** as central-innersurface-locking adjustable ring **129** and two button tunnels **131**,

to prevent four post-height-adjusting nipples **120** from twisting and bending out of two button tunnels **131** when the wind tries to twist and bend the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup.

3) No prior art mention or disclose any collapsible popup, having **pulley-wheels 145**.

Therefore, the prior art of collapsible popup:

a) Can not be used as pulleys to thread ropes **141**,

to tighten canopies;

b) Can not be used to roll the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup along the ground when in collapsed configuration,

to make transportation easier;

c) Can not be used to assist in moving the adjustable-central-canopy

adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup when fully erected,

to help with relocating the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup; and

d) Can not be used with ropes **141** to connect four lower posts **121** together and other popups to the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup,

to strengthen and expand structure and to keep four lower posts **121** from bending out.

4) No prior art mention or disclose any collapsible popup, having **tick-preventing downward teeth 117**.

Therefore, the prior art of collapsible popup:

a) Can not prevent ticks from getting inside four upper posts **112** and four lower posts **121**,

to protect occupants from disease;

b) Can not help protect from weather elements getting up inside four upper posts **112** and four lower posts **121**,

to help prevent against rust and increase the lifetime of the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup;

c) Can not assist in water drainage,

to help prevent rusting; and

d) Can not provide additional structure to four sleeves **115**,

to increase strength of four upper posts **112** and four lower posts **121**.

5) No prior art mention or disclose any collapsible popup, having **post-centering clamps 116**.

Therefore, the prior art of collapsible popup:

a) Can not center four lower posts **121** within four upper posts **112**,

to help with assembly and disassembly;

b) Can not help keep ticks from entering into four upper posts **112** and four lower posts **121**,

to protect occupants;

c) Can not provide addition strength and stability to four upper posts **112** and four lower posts **121**,

to keep occupants safe and increase the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup's lifetime; and

d) Can not keep four upper posts **112** and four lower posts **121** from binding

to help with adjusting the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup up and down.

6) No prior art mention or disclose any collapsible popup, having

central square post 125.

Therefore, the prior art of collapsible popup:

a) Can not provide lateral strength to the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup,

to keep the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup from radially twisting;

b) Can not lock canopy structure together,

to prevent canopy from collapsing;

c) Can not provide multiple adjustment locations,

to give options for setup; and

d) Can not decrease the total number of overall locking points,

to make setup easier.

7) No prior art mention or disclose any collapsible popup, having

lead-in funnels 130.

Therefore, the prior art of collapsible popup:

a) Can not automatically guide central square post **125** into central-innersurface-locking adjustable ring **129**,

to help with setup;

b) Can not automatically guide central square post **125** into both top and bottom of central-innersurface-locking adjustable ring **129**,

to make up and down adjustments easier;

c) Can not automatically depress central-innersurface-locking double nipples **128**,

to make locking central square post **125** easier; and

d) Can not automatically provide less friction between central-innersurface-locking adjustable ring **129** and central square post **125**,

to make setup and adjustment easier.

8) No prior art mention or disclose any collapsible popup, having **water-discharging grooves 118**.

Therefore, the prior art of collapsible popup:

a) Can not allow water to drain from four upper posts **112** and four lower posts **121**,

to prevent four upper posts **112** and four lower posts **121** from rusting;

b) Can not prevent water from getting into posts,

to help prolong the life of the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup;

c) Can not help protect against insects,

to help protect occupants; and

e) Can not provide addition structure to sleeves,

to increase strength of four upper posts **112** and four lower post **121**.

9) No prior art mention or disclose any collapsible popup, having

foldable adjustable awning trusses 136.

Therefore, the prior art of collapsible popup:

a) Can not provide support for surrounding awning **135**,

to keep surrounding awning **135** fabric from drooping;

b) Can not adjust surrounding awning **135** up,

to redirect airflow out;

c) Can not adjust surrounding awning **135** down,

to redirect airflow down; and

d) Can not provide additional support to the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup,

to strengthen overall structure.

10) No prior art mention or disclose any collapsible popup, having

four sleeves 115.

Therefore, the prior art of collapsible popup:

a) Can not prevent four upper posts **112** and four lower posts **121** from scratching each other,

to prevent premature wear or rusting;

b) Can not minimize friction between four upper posts **112** and four lower posts **121**,

to make raising and lowing easier;

c) Can not protect exposed joints of four upper posts **112** and four lower posts **121**,

to prevent rusting and increase lifetime; and

d) Can not join four upper posts **112** and four lower posts **121** together

to provide additional strength and support for posts.

11) No prior art mention or disclose any collapsible popup, having **rope and stake holes 140**.

Therefore, the prior art of collapsible popup:

a) Can not be used to thread ropes **141** through,

to use with either pulley wheels or hooks;

b) Can not be used to drive a stakes **142** through into the ground,

to secure the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup to the ground;

c) Can not be used as a pulley for ropes **141**,

to be used with other pulley-wheels **145** and ropes **141**; and

d) Can not be used as a tie-off location for ropes **141**,

to increase customization options for ropes **141** and pulley wheels **145**.

12) No prior art mention or disclose any collapsible popup, having **hooks 139**.

Therefore, the prior art of collapsible popup:

a) Can not hook canopy ropes **141** on hooks **139** to lock ropes **141** and all canopies and awning to keep them from slipping;

b) Can not provide a location of rope-and-stake holes **140**, to help with staking four lower posts **121** to the ground;

c) Can not be used as a foot step, to help with setup and to drive four lower posts **121** into the ground; and

d) Can not hook ropes **141** on hooks **139** from four lower posts **121**, to strengthen structure and keep four lower posts **121** from bending out.

ADVANTAGES OF THE PRESENT INVENTION

The present invention substantially departs from the conventional concepts and designs of the prior art. In doing so, the present invention provides **the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding-awning single-central-innersurface-square-lock popup (having: a) Post-centering tick-preventing water-discharging wind-and-smoke-redirecting ring-canopy system, b) Central-innersurface-locking wind-and-smoke-redirecting central-canopy system, c) Wind-and-smoke-redirecting**

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surrounding-awning system, and d) Multi-function hook-rope-stake-pulley-wheel system), having many unique and significant features, functions, and advantages, which overcome all the disadvantages of the prior art, as follows:

1) The present invention provides an adjustable-central-canopy adjustable- ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup, having

adjustable ring canopy 102,

adjustable central canopy 124, **and**

adjustable surrounding awning 135.

Therefore, the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup:

a) Can provide shade to occupants,

to prevent sunburn;

b) Can be adjusted up and down to increase airflow into and out of the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup,

to keep occupants cool;

c) Can help with airflow out of the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup,

to assist in smoke exiting the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup; and

d) Can provide rain protection,

to keep occupants dry.

2) The present invention further provides an adjustable-central-canopy adjustable-surround-canopy adjustable-awning single-central-innersurface-square-lock popup, having **central-innersurface-locking adjustable ring 129**.

Therefore, the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup:

a) Can lock central square post **125** to the rest of the canopy structure,

to increase overall strength of the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup;

b) Can lock canopy together,

to prevent the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup from collapsing;

c) Can decrease the total number of locking points,

to make setup easier; and

d) Can lock four post-height-adjusting nipples **120** and central square post **125 on the same plane** as central-innersurface-locking adjustable ring **129** and two button tunnels **131**,

to prevent four post-height-adjusting nipples **120** from twisting and bending out of two button tunnels **131** when the wind tries

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to twist and bend the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup.

3) The present invention further provides an adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface- square-lock popup, having

pulley-wheels 145.

Therefore, the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup:

a) Can be used as pulleys to thread ropes **141**,

to tighten canopies;

b) Can be used to roll the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup along the ground when in collapsed configuration,

to make transportation easier;

c) Can be used to assist in moving the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup when fully erected,

to help with relocating the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup; and

d) Can be used with ropes **141** to connect four lower posts **121** together and other popups to the adjustable-central-canopy adjustable-ring-canopy

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adjustable-surrounding awning single-central-innersurface-square-lock popup,

to strengthen and expand structure and to keep four lower posts **121** from bending out.

4) The present invention further provides an adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface- square-lock popup, having

tick-preventing downward teeth 117.

Therefore, the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup:

a) Can prevent ticks from getting inside four upper posts **112** and four lower posts **121**,

to protect occupants from disease;

b) Can help protect from weather elements getting up inside four upper posts **112** and four lower posts **121**,

to help prevent against rust and increase the lifetime of the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup;

c) Can assist in water drainage,

to help prevent rusting; and

d) Can provide additional structure to four sleeves **115**,

to increase strength of four upper posts **112** and four lower

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posts **121**.

5) The present invention further provides an adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface- square-lock popup, having

post-centering clamps 116.

Therefore, the adjustable-central-canopy adjustable-surround-canopy adjustable-awning single-central-innersurface-square-lock popup:

a) Can center four lower posts **121** within four upper posts **112**,

to help with assembly and disassembly;

b) Can help keep ticks from entering into four upper posts **112** and four lower posts **121**,

to protect occupants;

c) Can provide addition strength and stability to four upper posts **112** and four lower posts **121**,

to keep occupants safe and increase the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup's lifetime; and

d) Can keep four upper posts **112** and four lower posts **121** from binding

to help with adjusting the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup up and down.

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6) The present invention further provides an adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface- square-lock popup, having

central square post 125.

Therefore, the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup:

a) Can provide lateral strength to the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface- square-lock popup,

to keep the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup from radially twisting;

b) Can lock canopy structure together,

to prevent canopy from collapsing;

c) Can provide multiple adjustment locations,

to give options for setup; and

d) Can decrease the total number of overall locking points,

to make setup easier.

7) The present invention further provides an adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface- square-lock popup, having

lead-in funnels 130.

Therefore, the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding

awning single-central-innersurface-square-lock popup:

a) Can automatically guide central square post **125** into central-innersurface-locking adjustable ring **129**,

to help with setup;

b) Can automatically guide central square post **125** into both top and bottom of central-innersurface-locking adjustable ring **129**,

to make up and down adjustments easier;

c) Can automatically depress central-innersurface-locking double nipples **128**,

to make locking central square post **125** easier; and

d) Can automatically provide less friction between central-innersurface-locking adjustable ring **129** and central square post **125**,

to make setup and adjustment easier.

8) The present invention further provides an adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface- square-lock popup, having

water-discharging grooves 118.

Therefore, the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup:

a) Can allow water to drain from four upper posts **112** and four lower posts **121**,

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to prevent four upper posts **112** and four lower posts **121** from rusting;

b) Can prevent water from getting into posts,

to help prolong the life of the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup;

c) Can help protect against insects,

to help protect occupants; and

d) Can provide addition structure to sleeves,

to increase strength of four upper posts **112** and four lower posts **121**.

9) The present invention further provides an adjustable-central- canopy adjustable-ring-canopy adjustable-surrounding awning single-central- innersurface-square-lock popup, having

foldable adjustable awning trusses 136.

Therefore, the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup:

a) Can provide support for surrounding awning **135**,

to keep surrounding awning **135** fabric from drooping;

b) Can adjust surrounding awning **135** up,

to redirect airflow out;

c) Can adjust surrounding awning **135** down,

to redirect airflow down; and

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d) Can provide additional support to the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup,

to strengthen overall structure.

10) The present invention further provides an adjustable-central- canopy adjustable-ring-canopy adjustable-surrounding awning single-central- innersurface-square-lock popup, having

four sleeves 115.

Therefore, the adjustable-central-canopy adjustable-surround-canopy adjustable-awning single-central-innersurface-square-lock popup:

a) Can prevent four upper posts **112** and four lower posts **121** from scratching each other

to prevent premature wear or rusting;

b) Can minimize friction between four upper posts **112** and four lower posts **121**,

to make raising and lowing easier;

c) Can protect exposed joints of four upper posts **112** and four lower posts **121**,

to prevent rusting and increase lifetime; and

d) Can join four upper posts **112** and four lower posts **121** together

to provide additional strength and support for posts.

11) The present invention further provides an adjustable-central-canopy adjustable-ring-canopy

adjustable-surrounding awning single-central- innersurface-square-lock popup, having **rope-and-stake holes 140**.

Therefore, the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup:

a) Can be used to thread ropes **141** through,

to use with either pulley wheels or hooks;

b) Can be used to drive stake **142** through into the ground,

to secure the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup to the ground;

c) Can be used as a rope pulley,

to be used with other pulley-wheels **145** and ropes **141**; and

d) Can be used as a tie-off location for ropes **141**,

to increase customization options for ropes **141** and pulley wheels **145**.

12) The present invention further provides an adjustable-central- canopy adjustable-ring-canopy adjustable-surrounding awning single-central- innersurface-square-lock popup, having

hooks 139.

Therefore, the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup:

a) Can hook canopy ropes **141** on hooks **139**

to lock ropes **141** and all canopies and awning to keep them from slipping;

b) Can provide a location of rope-and-stake holes **140**,

to help with staking four lower posts **121** to the ground;

c) Can be used as a foot step,

to help with setup and to drive four lower posts **121** into the ground; and

d) Can hook ropes **141** on hooks **139** from four lower posts **121**,

to strengthen structure and keep four lower posts **121** from bending out.

Other advantages of the present invention will become apparent from a consideration of the accompanying drawings and ensuing description.

SUMMARY OF THE INVENTION

A multiple-adjustable-canopy-and-awning single-lock popup comprises: an adjustable ring canopy and an adjustable central canopy and an adjustable surrounding awning each being able to be adjusted up and down, a central intersector, foldable top and corner and side trusses each bolted to the central intersector, four upper posts, four upper corner intersectors each bolted to the top and side trusses**,** four lower corner intersectors and four sleeves each slid on the four upper posts, **post-centering clamps and tick-preventing downward teeth and water-discharging grooves** each respectively molded to the four sleeves, four lower posts inserted inside the four upper posts, a central square post attached to

the central intersector, **central-innersurface-locking double nipples** attached to the central square post, **a central-innersurface-locking adjustable ring** adjustably and slidably locked on and unlocked from the central square post **for locking and unlocking** the central square post and the central-innersurface-locking double nipples to and from the central-innersurface-locking adjustable ring and the foldable adjustable central trusses **on the same plane to prevent the popup from radially twisting clockwise or counterclockwise and to lock and unlock the popup after the popup is folded or unfolded**, hooks respectively welded or molded to the four lower posts, ropes hooked on at least one of the four lower posts or the hooks, **and pulley-wheels each rotatably attached to the hooks for functioning as pulleys and wheels to wrap the ropes thereon to tie the four lower posts together and to roll the popup along the ground**.

In one aspect, the present invention provides an adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding-awning single-central-innersurface-square-lock popup comprising:

an adjustable ring canopy;

a central intersector;

foldable top trusses

respectively attached to said adjustable ring canopy and

respectively and pivotably bolted to said central intersector;

top-truss connectors

respectively and pivotably bolted to said foldable top trusses;

foldable corner trusses

respectively and pivotably bolted to said foldable top trusses;

foldable side trusses

respectively and pivotably are bolted to one another;

four upper corner intersectors

respectively and pivotably bolted to said foldable top trusses and

respectively and pivotably bolted to said foldable side trusses;

four upper posts

respectively attached to said four upper corner intersectors,

said four upper posts

each having

a bottom end;

four lower corner intersectors

respectively bolted to said foldable corner trusses,

respectively bolted to said foldable side trusses, and

respectively slid on said four upper posts;

four sleeves

respectively slid on said bottom end of said four upper posts;

post-centering clamps

respectively molded to said four sleeves;

tick-preventing downward teeth

respectively molded to said four sleeves;

water-discharging grooves

respectively molded to said four sleeves;

four post-height-adjusting spring-loaded rockers

respectively attached to said four sleeves;

four post-height-adjusting nipples

respectively molded to said four post-height-adjusting spring-loaded rockers;

four lower posts

respectively and slidably inserted inside said four upper posts;

post-height-adjusting holes

respectively formed in said four upper posts and said four lower posts;

an adjustable central canopy;

a central square post

attached to said central intersector;

central-post holes

respectively formed in said central square post;

a central-innersurface-locking double-C-shaped spring

inserted inside said central square post;

central-innersurface-locking double nipples

respectively molded to said central-innersurface-locking double-C-shaped spring;

a central-innersurface-locking adjustable ring

adjustably and slidably locked on and unlocked from said central square post, said central-innersurface-locking adjustable ring

having

an outer surface, an inner surface, and two ends;

lead-in funnels

respectively molded to one of said two ends of said central-innersurface-locking adjustable ring;

two button tunnels

respectively molded from said outer surface to said inner surface of said

central-innersurface-locking adjustable ring;

two buttons

respectively snapped into said two button tunnels;

foldable adjustable central trusses

respectively and pivotably bolted to said foldable top trusses,

respectively attached to said adjustable central canopy, and

respectively and pivotably bolted to said central-innersurface-locking adjustable ring;

an adjustable surrounding awning;

foldable adjustable awning trusses

respectively and pivotably bolted to said top-truss connectors or

respectively and pivotably bolted to said foldable top trusses, and

respectively attached to said adjustable surrounding awning;

rotatable awning-truss sleeves

respectively and pivotably attached to said four upper posts and

respectively and slidably slid on said foldable adjustable awning trusses;

hooks

respectively welded or molded to said four lower posts;

rope-and-stake holes

respectively formed in said hooks; and

ropes

respectively threaded through at least one of said rope-and-stake holes and

respectively hooked on at least one of said four lower posts or said hooks,

wherein:

said adjustable ring canopy

is for

redirecting wind, smoke, and light into and out of the popup,

said adjustable central canopy

is for

redirecting wind, smoke, and light into and out of the popup,

said adjustable surrounding awning

is for

redirecting wind, smoke, and light into and out of the popup,

said post-centering clamps

respectively are for

centering said four lower posts inside said four upper posts,

said tick-preventing downward teeth

respectively are for

preventing ticks from getting inside said four upper posts and said four lower posts,

said water-discharging grooves

respectively are for

allowing water to discharge out of said four upper posts and said four lower posts,

said central-innersurface-locking adjustable ring

is for:

sliding up on said central square post to snap-lock on some of said central-

innersurface-locking double nipples

to push up said central trusses, which push up said top trusses to raise said adjustable central canopy and said adjustable ring canopy, and

to push up said top trusses, which rotate said awning trusses to lower said adjustable surrounding awning,

sliding down on said central square post to snap-lock on some other of said central-innersurface-locking double nipples

to pull down said central trusses, which pull down said top trusses to lower said adjustable ring canopy and said adjustable central canopy, and

to pull down said top trusses, which rotate said awning trusses to raise said adjustable surrounding awning,

preventing the popup from radially twisting clockwise or counterclockwise, and

locking and unlocking the popup after the popup is folded or unfolded,

said central square post

is for

preventing the popup from radially twisting clockwise or counterclockwise.

In a further aspect, the present invention provides a single-central-innersurface-square-lock popup comprising:

an adjustable ring canopy;

a central intersector;

foldable top trusses

respectively attached to said adjustable ring canopy and

respectively and pivotably bolted to said central intersector;

top-truss connectors

respectively and pivotably bolted to said foldable top trusses;

foldable corner trusses

respectively and pivotably bolted to said foldable top trusses;

foldable side trusses

respectively and pivotably are bolted to one another;

four upper corner intersectors

respectively and pivotably bolted to said foldable top trusses and

respectively and pivotably bolted to said foldable side trusses;

four upper posts

respectively attached to said four upper corner intersectors,

said four upper posts

each having

a bottom end;

four lower corner intersectors

respectively bolted to said foldable corner trusses,

respectively bolted to said foldable side trusses, and

respectively slid on said four upper posts;

four sleeves

respectively slid on said bottom end of said four upper posts;

post-centering clamps

respectively molded to said four sleeves;

four post-height-adjusting spring-loaded rockers

respectively attached to said four sleeves;

four post-height-adjusting nipples

respectively molded to said four post-height-adjusting spring-loaded rockers;

four lower posts

respectively and slidably inserted inside said four upper posts;

post-height-adjusting holes

respectively formed in said four upper posts and said four lower

posts;

an adjustable central canopy;

a central square post

attached to said central intersector;

central-post holes

respectively formed in said central square post;

a central-locking spring

inserted inside said central square post;

central-locking nipples

respectively molded to said central-locking spring;

a central-locking ring

adjustably and slidably locked on and unlocked from said central square post,

said central-locking ring

having

an outer surface, an inner surface, and two ends;

two button tunnels

respectively molded from said outer surface to said inner surface of said

central- locking ring;

two buttons

respectively snapped into said two button tunnels;

foldable adjustable central trusses

respectively and pivotably bolted to said foldable top trusses,

respectively and pivotably bolted to said central locking ring, and

respectively attached to said adjustable central canopy;

an adjustable surrounding awning;

foldable adjustable awning trusses

respectively and pivotably bolted to said top-truss connectors or

respectively and pivotably bolted to said foldable top trusses, and

respectively attached to said adjustable surrounding awning;

rotatable awning-truss sleeves

respectively and pivotably attached to said four upper posts and

respectively and slidably slid on said foldable adjustable awning

trusses; and

hooks

respectively welded or molded to said four lower posts,

wherein:

said adjustable ring canopy

is for

redirecting wind, smoke, and light into and out of the popup,

said adjustable central canopy

is for

redirecting wind, smoke, and light into and out of the popup,

said adjustable surrounding awning

is for redirecting wind, smoke, and light into and out of the popup,

said post-centering clamps

respectively are for

centering said four lower posts inside said four upper posts,

said central-locking ring

is for:

sliding up on said central square post to snap-lock on

some of said central-locking nipples

to push up said central trusses, which push up said top trusses

to raise said adjustable central canopy and said adjustable ring canopy, and

to push up said top trusses, which rotate said awning trusses

to lower said adjustable surrounding awning,

sliding down on said central square post to snap-lock on

some other of said central-locking nipples

to pull down said central trusses, which pull down said top trusses

to lower said adjustable ring canopy and said adjustable central canopy, and

to pull down said top trusses, which rotate said awning trusses

to raise said adjustable surrounding awning,

preventing the popup from radially twisting clockwise or counterclockwise, and

locking and unlocking the popup after the popup is folded or unfolded,

said central square post

is for

preventing the popup from radially twisting clockwise or counterclockwise.

In a further aspect, the present invention provides a multiple-adjustable-canopy central-lock popup comprising:

an adjustable ring canopy;

a central intersector;

foldable top trusses

respectively attached to said adjustable ring canopy and

respectively and pivotably bolted to said central intersector;

top-truss connectors

respectively and pivotably bolted to said foldable top trusses;

foldable corner trusses

respectively and pivotably bolted to said foldable top trusses;

foldable side trusses

respectively and pivotably are bolted to one another;

four upper corner intersectors

respectively and pivotably bolted to said foldable top trusses and

respectively and pivotably bolted to said foldable side trusses;

four upper posts

respectively attached to said four upper corner intersectors,

said four upper posts

each having

a bottom end;

four lower corner intersectors

respectively bolted to said foldable corner trusses,

respectively bolted to said foldable side trusses, and

respectively slid on said four upper posts;

four sleeves

respectively slid on said bottom end of said four upper posts;

four post-height-adjusting spring-loaded rockers

respectively attached to said four sleeves;

four post-height-adjusting nipples

respectively molded to said four post-height-adjusting spring-loaded rockers;

four lower posts

respectively and slidably inserted inside said four upper posts;

post-height-adjusting holes

respectively formed in said four upper posts and said four lower

posts;

an adjustable central canopy;

a central square post

attached to said central intersector;

central-post holes

respectively formed in said central square post;

a central-locking spring

inserted inside said central square post;

central-locking nipples

respectively molded to said central-locking spring;

a central-locking ring

adjustably and slidably locked on and unlocked from said central square post,

said central-locking ring

having

an outer surface, an inner surface, and two ends;

two button tunnels

respectively molded from said outer surface to said inner surface of said central-locking ring;

two buttons

respectively attached to said two button tunnels;

foldable adjustable central trusses

respectively and pivotably bolted to said foldable top trusses,

respectively and pivotably bolted to said central-locking ring, and

respectively attached to said adjustable central canopy; and

hooks

respectively welded or molded to said four lower posts.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1A, **FIG. 1B**, **FIG. 1C**, and **FIG. 1D** illustrate front and perspective views of the assembly of the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup according to an embodiment of the present invention.

FIG. 2A, **FIG. 2B**, and **FIG. 3** illustrate front and perspective views of the central-innersurface-locking wind-and-smoke-redirecting adjustable-central-canopy system **123** according to an embodiment of the present invention.

FIG. 4A, **FIG. 4B**, and **FIG. 5** illustrate front and perspective views of the post-centering tick-preventing water-discharging wind-and-smoke-redirecting adjustable-ring-canopy system **101** according to an embodiment of the present invention.

FIG. 6A, **FIG. 6B**, and **FIG. 7** illustrate front and perspective views of the wind-and-smoke-redirecting adjustable-surrounding-awning system **134** according to an embodiment of the present invention.

FIG. 8, **FIG. 9**, **FIG. 10**, **FIG. 11**, and **FIG. 12** illustrate perspective views of how foldable top trusses **107a**, foldable corner trusses **108**, and foldable side trusses **109** are assembled together according to an embodiment of the present invention.

FIG. 13A, **FIG. 13B**, **FIG. 13C**, **FIG. 14**, **FIG. 15A**, and **FIG. 15B** illustrate front and perspective views of how the central-innersurface-locking wind-and-smoke-redirecting adjustable-central-canopy system **123** is assembled with central square post **125** according to an embodiment of the present invention.

FIG. 16A and **FIG. 16B** illustrate front views of the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup when folded and rolled away for transportation and storage according to an embodiment of the present invention.

FIG. 17A, **FIG. 17B**, and **FIG. 17C** illustrate perspective and cross-sectional views of post-centering clamps **116**, tick-preventing downward teeth **117**, and water-discharging grooves **118** according to an embodiment of the present invention.

FIG. 18A, **FIG. 18B**, and **FIG. 18C** illustrate cross-sectional views of how to adjustably lock central-innersurface-locking adjustable ring **129** at multiple different elevations according to an embodiment of the present invention.

FIG. 19A, **FIG. 19B**, **FIG. 19C**, and **FIG. 19D** illustrate cross-sectional and front views of how to adjustably lock the central-innersurface-locking wind-and-smoke-redirecting adjustable-central-canopy system **123** at open and closed positions according to an embodiment of the present invention.

FIG. 19E, **FIG. 19F**, **FIG. 19G**, and **FIG. 19H** illustrate top views of how the central square post **125** prevents the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup from radially twisting out of its desired shape clockwise or counterclockwise according to

an embodiment of the present invention.

FIG. 20A, **FIG. 20B**, **FIG. 20C**, **FIG. 20D**, **FIG. 20E**, **FIG. 20F**, **FIG. 20G**, and **FIG. 20H** illustrate front and perspective views of how to redirect wind and smoke using the post-centering tick-preventing water-discharging wind-and-smoke-redirecting ring-canopy system **101**, the central-innersurface-locking wind-and-smoke-redirecting adjustable-central-canopy system **123**, and the Wind-and-smoke-redirecting surrounding-awning system **134** according to an embodiment of the present invention.

FIG. 21A, **FIG. 21B**, **FIG. 21C**, and **FIG. 21D** illustrate perspective and side views of how ropes **141** hook on and interact with hooks **139**, four lower posts **121**, and pulley-wheels **145** according to an embodiment of the present invention.

FIG. 22A, **FIG. 22B**, **FIG. 22C**, and **FIG. 23** illustrate front and perspective views of how ropes **141** hook on and interact with hooks **139**, four lower posts **121**, and pulley-wheels **145** to prevent four lower posts **121** from spreading outwards (for example, when there is heavy snow sitting on top the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup) according to an embodiment of the present invention.

FIG. 24A, **FIG. 24B**, **FIG. 24C**, and **FIG. 24D** illustrate perspective and front views of equivalent variations of adjustable ring canopy **102** and adjustable surrounding awning **135** according to an embodiment of the present invention.

FIG. 25A and **FIG. 25B** illustrate cross-sectional views of equivalent variations of central-innersurface-locking double-C-shaped spring **127** according to an embodiment of the present invention.

FIG. 26A illustrates a perspective view of how the central-innersurface-locking wind-and-

smoke-redirecting adjustable-central-canopy system **123** is assembled with a central round post according to an embodiment of the present invention.

FIG. 26B illustrates a perspective view of an equivalent variation of the adjustable- central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup having no wind-and-smoke-redirecting adjustable-surrounding-awning system **134** and no pulley-wheels **145** according to an embodiment of the present invention.

FIG. 27A, **FIG. 27B**, **FIG. 27C**, **FIG. 27D**, **FIG. 27E**, and **FIG. 27F** illustrate perspective, cross-sectional, and front views of equivalent variations of two buttons **132** according to an embodiment of the present invention.

FIG. 28A, **FIG. 28B**, **FIG. 28C**, and **FIG. 28D** illustrate front and perspective views of equivalent variations of the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup, hooks **139**, and pulley-wheels **145** according to an embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

The adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding-awning single-central-innersurface-square-lock popup comprises:

1) **Post-centering tick-preventing water-discharging wind-and-smoke-redirecting adjustable-ring-canopy system,**
2) **Central-innersurface-square-locking wind-and-smoke-redirecting adjustable-central-canopy system,**
3) **Wind-and-smoke-redirecting adjustable-surrounding-awning**

system, and

4) **Multi-function hook-rope-stake-pulley-wheel system.**

COMPONENT

Referring to **FIG. 1A**, **FIG. 1B**, **FIG. 1C**, **FIG. 1D**, **FIG. 2A**, **FIG. 2B**, **FIG. 3**, **FIG. 4A**, **FIG. 4B**, **FIG. 5**, **FIG. 6A**, **FIG. 6B**, **FIG. 7**, **FIG. 8**, **FIG. 9**, **FIG. 10**, **FIG. 11**, **FIG. 12**, **FIG. 13A**, **FIG. 13B**, **FIG. 13C**, **FIG. 14**, **FIG. 15A**, **FIG. 15B**, **FIG. 16A**, and **FIG. 16B**,

the adjustable-central-canopy adjustable-surround-canopy adjustable-awning single-central-innersurface-square-lock popup comprises:

1) Post-centering tick-preventing water-discharging wind-and-smoke-redirecting adjustable-ring-canopy system **101**, comprising:
2) Adjustable ring canopy **102**,
3) Central intersector **103**,
4) Intersector holes **104**,
5) Bolts **105**,
6) Nuts **106**,
7) Foldable top trusses **107a**,
   Top-truss connectors **107b**,
8) Foldable corner trusses **108**,
9) Foldable side trusses **109**,
10) Truss holes **110**,
11) Four upper corner intersectors **111**,
12) Four upper posts **112**,
13) Four lower corner intersectors **113**,
14) Four corner-intersector stoppers **114**,
15) Four sleeves **115**,
16) Post-centering clamps **116**,
17) Tick-preventing downward teeth **117**,
18) Water-discharging grooves **118**,
19) Four post-height-adjusting spring-loaded rockers **119**,
20) Four post-height-adjusting nipples **120**,

21) Four lower posts **121**,

22) Post-height-adjusting holes **122**;

23) Central-innersurface-locking wind-and-smoke-redirecting adjustable-central-canopy system **123**, comprising:

24) Adjustable central canopy **124**,

25) Central square post **125**,

26) Central-post holes **126**,

27) Central-innersurface-locking double-C-shaped spring **127**,

28) Central-innersurface-locking double nipples **128**,

29) Central-innersurface-locking adjustable ring **129**,

30) Lead-in funnels **130**,

31) Two button tunnels **131**,

32) Two buttons **132**,

33) Foldable adjustable central trusses **133**;

34) Wind-and-smoke-redirecting adjustable-surrounding-awning system **134**, comprising:

35) Adjustable surrounding awning **135**,

36) Foldable adjustable awning trusses **136**,

37) Rotatable awning-truss sleeves **137**; and

38) Multi-function hook-rope-stake-pulley-wheel system **138**, comprising:

39) Hooks **139**,

40) Rope-and-stake holes **140**,

41) Ropes **141**,

42) Stakes **142**,

43) Pulley-wheel arms **143**,

44) Pulley-wheel axles **144**,

45) Pulley-wheels **145**.

MATERIAL

Referring to **FIG. 1A**, **FIG. 1B**, **FIG. 1C**, **FIG. 1D**, **FIG. 2A**, **FIG. 2B**, **FIG. 3**, **FIG. 4A**, **FIG. 4B**, **FIG. 5**, **FIG. 6A**, **FIG. 6B**, **FIG. 7**, **FIG. 8**, **FIG. 9**, **FIG. 10**, **FIG. 11**, **FIG. 12**, **FIG. 13A**, **FIG. 13B**, **FIG. 13C**, **FIG. 14**, **FIG. 15A**, **FIG. 15B**, **FIG. 16A**, and **FIG. 16B**:

1) Post-centering tick-preventing water-discharging foldable wind-and-smoke-redirecting adjustable-ring-canopy system **101** is made of the combined materials of its components.

2) Adjustable ring canopy **102**

is made of canvas, fabric, nylon, the like, the equivalent, or flexible material.

3) Central intersector **103**

is made of metal or plastic material.

4) Intersector holes **104**

each are made of empty space.

5) Bolts **105**

each are made of metal or plastic material.

6) Nuts **106**

each are made of metal or plastic material.

7) Foldable top trusses **107a**

each are made of metal or plastic material.

Top-truss connectors **107b**

each are made of metal or plastic material.

8) Foldable corner trusses **108**

each are made of metal or plastic material.

9) Foldable side trusses **109**

each are made of metal or plastic material.

10) Truss holes **110**

each are made of empty space.

11) Four upper corner intersectors **111**

each are made of metal or plastic material.

12) Four upper posts **112**

each are made of metal or plastic material.

13) Four lower corner intersectors **113**

each are made of metal or plastic material.

14) Four corner-intersector stoppers **114**

each are made of metal or plastic material.

15) Four sleeves **115**

each are made of metal or plastic material.

16) Post-centering clamps **116**

each are made of metal or plastic material.

17) Tick-preventing downward teeth **117**

each are made of metal or plastic material.

18) Water-discharging grooves **118**

each are made of empty space.

19) Four post-height-adjusting spring-loaded rockers **119**

each are made of metal or plastic material.

20) Four post-height-adjusting nipples **120**

each are made of metal or plastic material.

21) Four lower posts **121**

each are made of metal or plastic material.

22) Post-height-adjusting holes **122**

each are made of empty space.

23) Central-innersurface-locking wind-and-smoke-redirecting adjustable-central-canopy system **123** is made of the combined materials of its components.

24) Adjustable central canopy **124**

is made of canvas, fabric, nylon, the like, the equivalent, or flexible material.

25) Central square post **125**

is made of metal or plastic material.

26) Central-post holes **126**

each are made of empty space.

27) Central-innersurface-locking double-C-shaped spring **127**

is made of metal or plastic material.

28) Central-innersurface-locking double nipples **128**

each are made of metal or plastic material.

29) Central-innersurface-locking adjustable ring **129**

is made of metal or plastic material.

30) Lead-in funnels **130**

each are made of empty space.

31) Two button tunnels **131**

each are made of empty space.

32) Two buttons **132**

each are made of metal or plastic material.

33) Foldable adjustable central trusses **133**

each are made of metal or plastic material.

34) Wind-and-smoke-redirecting adjustable-surrounding-awning system **134** is made of the combined materials of its components.

35) Adjustable surrounding awning **135**

is made of canvas, fabric, nylon, the like, the equivalent, or flexible material.

36) Foldable adjustable awning trusses **136**

each are made of metal or plastic material.

37) Rotatable awning-truss sleeves **137**

each are made of metal or plastic material.

38) Multi-function hook-rope-stake-pulley-wheel system **138** is made of the combined materials of its components.

39) Hooks **139**

each are made of metal or plastic material.

40) Rope-and-stake holes **140**

each are made of empty space.

41) Ropes **141**

each are made of canvas, fabric, nylon, the like, the equivalent, or flexible material.

42) Stakes **142**

each are made of metal or plastic material.

43) Pulley-wheel arms **143**

each are made of metal or plastic material.

44) Pulley-wheel axles **144**

each are made of metal or plastic material.

45) Pulley-wheels **145**

each are made of metal or plastic material.

SHAPE

Referring to **FIG. 1A**, **FIG. 1B**, **FIG. 1C**, **FIG. 1D**, **FIG. 2A**, **FIG. 2B**, **FIG. 3**, **FIG. 4A**, **FIG. 4B**, **FIG. 5**, **FIG. 6A**, **FIG. 6B**, **FIG. 7**, **FIG. 8**, **FIG. 9**, **FIG. 10**, **FIG. 11**, **FIG. 12**, **FIG. 13A**, **FIG. 13B**, **FIG. 13C**, **FIG. 14**, **FIG. 15A**, **FIG. 15B**, **FIG. 16A**, and **FIG. 16B**:

1) Post-centering tick-preventing water-discharging foldable wind-and-smoke-redirecting adjustable-ring-canopy system **101** has the combined shapes of its components.

2) Adjustable ring canopy **102**

is formed into a square-ring shape.

3) Central intersector **103**

is formed into a round shape with four U-shaped arms.

4) Intersector holes **104**

each are formed into a round shape.

5) Bolts **105**

each are formed into a bolt shape with a hexagon-shaped head.

6) Nuts **106**

each are formed into a hexagonal ring shape.

7) Foldable top trusses **107a**

each are formed into a rectangular-or-oval-tube shape.

Top-truss connectors **107b**

each are formed into a U shape.

8) Foldable corner trusses **108**

each are formed into a rectangular-or-oval-tube shape.

9) Foldable side trusses **109**

each are formed into a rectangular-or-oval-tube shape.

10) Truss holes **110**

each are formed into a round shape.

11) Four upper corner intersectors **111**

each are formed into a square-tube shape with one closed end, one open end, and three U-shaped arms.

12) Four upper posts **112**

each are formed into a tubular shape with a square cross-section.

13) Four lower corner intersectors **113**

each are formed into a square-tube shape with open ends and three U-shaped arms.

14) Four corner-intersector stoppers **114**

each are formed into a cylindrical shape.

15) Four sleeves **115**

each are formed into a square-ring shape.

16) Post-centering clamps **116**

each are formed into a waning-moon shape.

17) Tick-preventing downward teeth **117**

each are formed into a pyramid shape.

18) Water-discharging grooves **118**

each are formed into a half-moon shape.

19) Four post-height-adjusting spring-loaded rockers **119**

each are formed into a C shape.

20) Four post-height-adjusting nipples **120**

each are formed into a half-moon shape.

21) Four lower posts **121**

each are formed into a tubular shape with a square cross-section.

22) Post-height-adjusting holes **122**

each are formed into a half-moon shape.

23) Central-innersurface-locking wind-and-smoke-redirecting adjustable-central-canopy system **123** has the combined shapes of its components.

24) Adjustable central canopy **124**

is formed into a square shape.

25) Central square post **125**

is formed into a tubular shape with a square cross-section.

26) Central-post holes **126**

each are formed into a round shape.

27) Central-innersurface-locking double-C-shaped spring **127**

is formed into a double-W-shaped shape.

28) Central-innersurface-locking double nipples **128**

each are formed into a nipple shape.

29) Central-innersurface-locking adjustable ring **129**

is formed into a round-ring shape with a square central hole of multiple square innersurfaces and with multiple surrounding U-shaped truss brackets.

30) Lead-in funnels **130**

each are formed into a funnel shape.

31) Two button tunnels **131**

each are formed into a cylindrical shape with a body section, a smaller-diameter bottom section, and a smaller-diameter top section.

32) Two buttons **132**

each are formed into a cylindrical shape with a body section and a larger-diameter tapered waist section.

33) Foldable adjustable central trusses **133**

each are formed into a rectangular-or-oval-tube shape.

34) Wind-and-smoke-redirecting adjustable-surrounding-awning system **134** has the combined shapes of its components.

35) Adjustable surrounding awning **135**

is formed into a square-ring shape.

36) Foldable adjustable awning trusses **136**

each are formed into a rectangular-or-oval-tube shape.

37) Rotatable awning-truss sleeves **137**

each are formed into a rectangular-or-oval-tube shape.

38) Multi-function hook-rope-stake-pulley-wheel system **138** has the combined shapes of its components.

39) Hooks **139**

each are formed into a half-moon shape.

40) Rope-and-stake holes **140**

each are formed into a round shape.

41) Ropes **141**

each are formed into a string shape.

42) Stakes **142**

each are formed into a nail shape.

43) Pulley-wheel arms **143**

each are formed into a generally rectangular shape.

44) Pulley-wheel axles **144**

each are formed into a cylindrical shape.

45) Pulley-wheels **145**

each are formed into a pulley shape.

CONNECTION

Referring to **FIG. 1A**, **FIG. 1B**, **FIG. 1C**, **FIG. 1D**, **FIG. 2A**, **FIG. 2B**, **FIG. 3**, **FIG. 4A**, **FIG. 4B**, **FIG. 5**, **FIG. 6A**, **FIG. 6B**, **FIG. 7**, **FIG. 8**, **FIG. 9**, **FIG. 10**, **FIG. 11**, **FIG. 12**, **FIG. 13A**, **FIG. 13B**, **FIG. 13C**, **FIG. 14**, **FIG. 15A**, **FIG. 15B**, **FIG. 16A**, and **FIG. 16B**:

1) Post-centering tick-preventing water-discharging foldable wind-and-smoke-redirecting adjustable-ring-canopy system **101** has the combined connections of its components.

2) Adjustable ring canopy **102**

is attached to foldable top trusses **107a**.

3) Central intersector **103**

pivotably is bolted to foldable top trusses **107a**.

4) Intersector holes **104**

respectively are molded in central intersector **103**,

respectively are molded in four upper corner intersectors **111**, and

respectively are molded in four lower corner intersectors **113**.

5) Bolts **105**

respectively are inserted through intersector holes **104**.

6) Nuts **106**

respectively are screwed onto bolts **105**.

7) Foldable top trusses **107a**

respectively are attached to said adjustable ring canopy **102** and

respectively and pivotably are bolted to central intersector **103**.

Top-truss connectors **107b**

respectively and pivotably are bolted to foldable top trusses **107a**.

8) Foldable corner trusses **108**

respectively and pivotably are bolted to foldable top trusses **107a**.

9) Foldable side trusses **109**

respectively and pivotably are bolted to one another.

10) Truss holes **110**

respectively are drilled into foldable top trusses **107a**,

respectively are drilled into foldable corner trusses **108**,

respectively are drilled into foldable side trusses **109**, and

respectively are drilled into foldable adjustable central trusses **133**.

11) Four upper corner intersectors **111**

respectively and pivotably are bolted to foldable top trusses **107a** and

respectively and pivotably are bolted to said foldable side trusses **109**.

12) Four upper posts **112**

respectively are attached to four upper corner intersectors **111**.

13) Four lower corner intersectors **113**

respectively and pivotably are bolted to said foldable corner trusses **108**,

respectively and pivotably are bolted to said foldable side trusses **109**, and

respectively and pivotably are slid on four upper posts **112**.

14) Four corner-intersector stoppers **114**

respectively are attached to four upper posts **112** above four lower corner intersectors **113**.

15) Four sleeves **115**

respectively are slid on the bottom end of four upper posts **112**.

16) Post-centering clamps **116**

respectively are molded to four sleeves **115**.

17) Tick-preventing downward teeth **117**

respectively are molded to four sleeves **115**.

18) Water-discharging grooves **118**

respectively are molded to four sleeves **115**.

19) Four post-height-adjusting spring-loaded rockers **119**

respectively are attached to four sleeves **115**.

20) Four post-height-adjusting nipples **120**

respectively are molded to four post-height-adjusting spring-loaded rockers **119**.

21) Four lower posts **121**

respectively and slidably are inserted inside four upper posts **112**.

22) Post-height-adjusting holes **122**

respectively are formed in four upper posts **112** and four lower posts **121**.

23) Central-innersurface-locking wind-and-smoke-redirecting adjustable-central-canopy system **123** has the combined connections of its components.

24) Adjustable central canopy **124**

is attached to foldable adjustable central trusses **133**.

25) Central square post **125**

is attached to central intersector **103**.

26) Central-post holes **126**

respectively are formed in central square post **125**.

27) Central-innersurface-locking double-C-shaped spring **127**

is inserted inside central square post **125**.

28) Central-innersurface-locking double nipples **128**

respectively are molded to central-innersurface-locking double-C-shaped spring **127**.

29) Central-innersurface-locking adjustable ring **129**

adjustably and slidably is locked on and unlocked from central square post **125**.

30) Lead-in funnels **130**

respectively are molded to one end of central-innersurface-locking adjustable ring **129**.

31) Two button tunnels **131**

respectively are molded from the outer surface to the inner surface of central-innersurface-locking adjustable ring **129**.

32) Two buttons **132**

respectively are snapped into two button tunnels **131**.

33) Foldable adjustable central trusses **133**

respectively and pivotably are bolted to foldable top trusses **107a**,

respectively are attached to said adjustable central canopy **124**, and

respectively and pivotably are bolted to central-innersurface-locking adjustable

ring **129**.

34) Wind-and-smoke-redirecting adjustable-surrounding-awning system **134** has the combined connections of its components.

35) Adjustable surrounding awning **135**

is attached to foldable adjustable awning trusses **136**.

36) Foldable adjustable awning trusses **136**

respectively and pivotably are bolted to top-truss connectors **107a** or

respectively and pivotably are bolted to foldable top trusses **107b**, and

respectively are attached to said adjustable surrounding awning **135**.

37) Rotatable awning-truss sleeves **137**

respectively and pivotably are attached to four upper posts **112** and

respectively and slidably are slid on said foldable adjustable awning

trusses **136**.

38) Multi-function hook-rope-stake-pulley-wheel system **138** has the combined connections of its components.

39) Hooks **139**

respectively are welded or molded to four lower posts **121**.

40) Rope-and-stake holes **140**

respectively are formed in hooks **139**.

41) Ropes **141**

respectively are threaded through at least one of rope-and-stake holes **140** and respectively are hooked on at least one of four lower posts **121** or hooks **139**.

42) Stakes **142**

respectively are hammered through rope-and-stake holes **140**.

43) Pulley-wheel arms **143**

respectively are welded or molded to hooks **139**.

44) Pulley-wheel axles **144**

respectively are attached to and between pulley-wheel arms **143**.

45) Pulley-wheels **145**

respectively and rotatably are slid on pulley-wheel axles **144**.

FUNCTION

Referring to **FIG. 17A**, **FIG. 17B**, **FIG. 17C**, **FIG. 18A**, **FIG. 18B**, **FIG. 18C**, **FIG. 19A**, **FIG. 19B**, **FIG. 19C**, **FIG. 19D**, **FIG. 19E**, **FIG. 19F**, **FIG. 19G**, **FIG. 19H**, **FIG. 20A**,

FIG. 20B, **FIG. 20C**, **FIG. 20D**, **FIG. 20E**, **FIG. 20F**, **FIG. 20G**, **FIG. 20H**, **FIG. 21A**, **FIG. 21B**, **FIG. 21C**, **FIG. 21D**, **FIG. 22A**, **FIG. 22B**, **FIG. 22C**, and **FIG. 23**:

1) Post-centering tick-preventing water-discharging foldable wind-and-smoke-redirecting adjustable-ring-canopy system **101** is for performing the combined functions of its components.

2) Adjustable ring canopy **102** is for:

a) Providing a cover to protect users from weather elements;

b) Redirecting wind and smoke above adjustable ring canopy **102** into the inside of the adjustable-central-canopy adjustable-surround-canopy adjustable-awning single-central-innersurface-square-lock popup;

c) Redirecting wind and smoke to flow out and away from under the adjustable-central-canopy adjustable-surround-canopy adjustable-awning single-central-innersurface-square-lock popup; and

d) Allowing light to shine into the inside of the adjustable-central-canopy adjustable-surround-canopy adjustable-awning single-central-innersurface-square-lock popup.

3) Central intersector **103** is for:

Foldably attaching to foldable top trusses **107a**.

4) Intersector holes **104** respectively are for:

Screwing bolts **105** therethrough.

5) Bolts **105** respectively are for:

Attaching central intersector **103**, foldable top trusses **107a**, top-truss connectors **107b**, foldable corner trusses **108**, foldable side trusses **109**, four upper corner intersectors **111**, four lower corner intersectors **113**, central-innersurface-locking adjustable ring **129**, and foldable adjustable central trusses **133** together.

6) Nuts **106** respectively are for:

Securing bolts **105**.

7) Foldable top trusses **107a** respectively are for:

Supporting central intersector **103**.

Top-truss connectors **107b** respectively are for:

Pivotably coupling foldable top trusses **107a**.

8) Foldable corner trusses **108** respectively are for:

Pivotably supporting foldable top trusses **107a**.

9) Foldable side trusses **109** respectively are for:

Supporting foldable top trusses **107a**.

10) Truss holes **110** respectively are for:

Inserting bolts **105** therethrough.

11) Four upper corner intersectors **111** respectively are for:

Attaching foldable top trusses **107a**, foldable corner trusses **108**, and foldable side trusses **109** to four upper posts **112**.

12) Four upper posts **112** respectively are for:

Slidably sliding over four lower posts **121**.

13) Four lower corner intersectors **113** respectively are for:

Slidably attaching foldable side trusses **109** to four upper posts **112**.

14) Four corner-intersector stoppers **114** respectively are for:

Preventing four lower corner intersectors **113** from sliding upward.

15) Four sleeves **115** respectively are for:

Preventing four upper posts **112** and four lower posts **121** from scratching each other.

16) Post-centering clamps **116** respectively are for:

Centering four lower posts **121** inside four upper posts **112**

(see **FIG. 17A** and **FIG. 17B**).

17) Tick-preventing downward teeth **117** respectively are for:

Preventing ticks from getting inside four upper posts **112** and four lower posts **121**

(see **FIG. 17C**).

18) Water-discharging grooves **118** respectively are for:

Allowing water to discharge out of four upper posts **112** and four lower posts **121**

in the directions of arrows **146**

(see **FIG. 17C**).

19) Four post-height-adjusting spring-loaded rockers **119** respectively are for:

Pushing four post-height-adjusting nipples **120** into post-height-adjusting holes **122** to secure four upper posts **112** to four lower posts **121**.

20) Four post-height-adjusting nipples **120** respectively are for:

Snap-locking into post-height-adjusting holes **122** to secure four upper posts **112** to four lower posts **121**.

21) Four lower posts **121** respectively are for:

Adjusting the height of the adjustable-central-canopy adjustable-surround-canopy adjustable-awning single-central-innersurface-square-lock popup.

22) Post-height-adjusting holes **122** respectively are for:

Allowing four post-height-adjusting nipples **120** to snap-lock threrethrough to secure four upper posts **112** to four lower posts **121**.

23) Central-innersurface-locking wind-and-smoke-redirecting adjustable-central-canopy system **123** is for performing the combined functions of its components.

24) Adjustable central canopy **124** is for:

a) Covering the center of the adjustable-central-canopy adjustable-surround-canopy adjustable-awning single-central-innersurface-square-lock popup;
b) Redirecting wind and smoke above adjustable ring canopy **102** into the inside the adjustable-central-canopy adjustable-surround-canopy adjustable-awning single-central-innersurface-square-lock popup;
c) Redirecting wind and smoke to flow out and away from under the adjustable-central-canopy adjustable-surround-canopy adjustable-awning single-central-innersurface-square-lock popup; and
d) Allowing light to shine into the inside of the adjustable-central-canopy adjustable-surround-canopy adjustable-awning single-central-innersurface-square-lock popup.

25) Central square post **125** is for:

a) Locking central-innersurface-locking adjustable ring **129** thereon;
b) Preventing the adjustable-central-canopy adjustable-surround-canopy adjustable-awning single-central-innersurface-square-lock popup from

radially twisting clockwise out of its desired shape;

c) Preventing the adjustable-central-canopy adjustable-surround-canopy adjustable-awning single-central-innersurface-square-lock popup from radially twisting counterclockwise out of its desired shape; and

d) Reinforcing the adjustable-central-canopy adjustable-surround-canopy adjustable-awning single-central-innersurface-square-lock popup with its square cross-section.

26) Central-post holes **126** respectively are for:

Allowing central-innersurface-locking double nipples **128** to snap-lock therein to secure central square post **125** to central-innersurface-locking adjustable ring **129** and foldable adjustable central trusses **133**.

27) Central-innersurface-locking double-C-shaped spring **127** is for:

Pushing central-innersurface-locking double nipples **128** into central-post holes **126**.

28) Central-innersurface-locking double nipples **128** respectively are for:

a) Snap-locking into and out of central-innersurface-locking adjustable ring **129**

in the opposite directions of arrows **147a**, **147b**, **147c**, and **147d** when central-innersurface-locking adjustable ring **129** slides up and down central square post **125**

in the opposite directions of arrows **148a** and **148b**

(see **FIG. 18A**, **FIG. 18B**, and **FIG. 18C**);

b) Locking and unlocking central square post **125** central-innersurface-locking

double nipples **128** to and from central-innersurface-locking adjustable ring **129**

and foldable adjustable central trusses **133**

on the same plane 149a or **149b**

(see **FIG. 18A**, **FIG. 18B**, and **FIG. 18C**);

c) Adjusting the height of adjustable central canopy **124**,

to raise and lower adjustable central canopy **124**

to open and close the opening between adjustable central canopy **124** and adjustable ring canopy **102**

in the opposite directions of arrows **150a** and **150b**

(see **FIG. 19A**, **FIG. 19B**, **FIG. 19C**, and **FIG. 19D**)

to raise and lower adjustable central canopy **124**;

d) Adjusting the height of adjustable surrounding awning **135**,

to raise and lower adjustable surrounding awning **135**

in the opposite directions of arrows **151a** and **151b**

(see **FIG. 19A**, **FIG. 19B**, **FIG. 19C**, and **FIG. 19D**);

e) Locking and unlocking the adjustable-central-canopy adjustable-surround-canopy

adjustable-awning single-central-innersurface-square-lock popup

after the single-central-innersurface-square-lock popup is folded or unfolded.

29) Central-innersurface-locking adjustable ring **129** is for:

a) Snap-locking on and off central-innersurface-locking double nipples **128**

in the opposite directions of arrows **147a**, **147b**, **147c**, and **147d**

when central-innersurface-locking adjustable ring **129** slides

up and down central square post **125**

in the opposite directions of arrows **148a** and **148b**

(see **FIG. 18A**, **FIG. 18B**, and **FIG. 18C**);

b) Locking and unlocking central square post **125** and central-innersurface-locking

double nipples **128** to and from central-innersurface-locking adjustable ring **129**

and foldable adjustable central trusses **133**

on the same plane 149a or **149b**

(see **FIG. 18A**, **FIG. 18B**, and **FIG. 18C**);

c) Adjusting the height of adjustable central canopy **124**,

to raise and lower adjustable central canopy **124**

to open and close the opening between adjustable central canopy **124** and adjustable ring canopy **102**

in the opposite directions of arrows **150a** and **150b**

(see **FIG. 19A**, **FIG. 19B**, **FIG. 19C**, and **FIG. 19D**);

d) Adjusting the height of adjustable surrounding awning **135**,

to raise and lower adjustable surrounding awning **135**

in the opposite directions of arrows **151a** and **151b**

(see **FIG. 19A**, **FIG. 19B**, **FIG. 19C**, and **FIG. 19D**);

e) Adjusting the height of adjustable ring canopy **102**,

to raise and lower adjustable ring canopy **102**

in the opposite directions of arrows **151a** and **151b**

(see **FIG. 19A**, **FIG. 19B**, **FIG. 19C**, and **FIG. 19D**);

f) Preventing the adjustable-central-canopy adjustable-surround-canopy adjustable awning single-central-innersurface-square-lock popup from radially twisting clockwise and counterclockwise out of its desired shape in the directions of arrows **151c**, **151d**, **151e**, and **151f** (see **FIG. 19E**, **FIG. 19F**, **FIG. 19G**, and **FIG. 19H**);

g) Locking and unlocking the adjustable-central-canopy adjustable-surround-canopy adjustable-awning single-central-innersurface-square-lock popup after the single-central-innersurface-square-lock popup is folded or unfolded (see **FIG. 1A**, **FIG. 16A**, and **FIG. 16B**).

30) Lead-in funnels **130** respectively are for:

Leading central-innersurface-locking double nipples **128** onto the inner surface of central-innersurface-locking adjustable ring **129**.

31) Two button tunnels **131** respectively are for:

Housing two buttons **132**.

32) Two buttons **132** respectively are for:

Pushing central-innersurface-locking double nipples **128** out of two button tunnels **131**.

33) Foldable adjustable central trusses **133** respectively are for:

a) Adjusting the height of adjustable central canopy **124**

to raise and lower adjustable central canopy **124**;

b) Opening and closing the opening between adjustable central canopy **124** and adjustable ring canopy **102**

in the opposite directions of arrows **150a** and **150b**

(see **FIG. 19A**, **FIG. 19B**, **FIG. 19C**, and **FIG. 19D**); and

c) Folding and unfolding adjustable central canopy **124**.

34) Wind-and-smoke-redirecting adjustable-surrounding-awning system **134** is for performing the combined functions of its components.

35) Adjustable surrounding awning **135** is for:

a) Covering the surrounding areas of the adjustable-central-canopy adjustable-surround-canopy adjustable-awning single-central-innersurface-square-lock popup;

b) Redirecting wind and smoke under adjustable ring canopy **102** into the inside of the adjustable-central-canopy adjustable-surround-canopy adjustable-awning single-central-innersurface-square-lock popup;

c) Redirecting wind and smoke to flow out and away from under the adjustable-central-canopy adjustable-surround-canopy adjustable-awning single-central-innersurface-square-lock popup; and

d) Allowing light to shine into the inside of the adjustable-central-canopy adjustable-surround-canopy adjustable-awning single-central-innersurface-square-lock popup.

36) Foldable adjustable awning trusses **136** respectively are for:

a) Adjusting the height of adjustable surrounding awning **135**

to raise and lower adjustable surrounding awning **135**

in the opposite directions of arrows **151a** and **151b**

(see **FIG. 19A**, **FIG. 19B**, **FIG. 19C**, and **FIG. 19D**); and

b) Folding and unfolding adjustable surrounding awning **135**.

37) Rotatable awning-truss sleeves **137** respectively are for:

Slidably and pivotably attaching to four upper posts **112** to foldable adjustable awning trusses **136**.

For example:

The openings between adjustable ring canopy **102**, adjustable central canopy **124**, and adjustable surrounding awning **135** redirect wind and smoke into and out of the inside of the adjustable-central-canopy adjustable-surround-canopy adjustable-awning single-central-innersurface-square-lock popup:

in the directions of arrows **152a**, **152b**, **152c**, and **152d**

(see **FIG. 20A**),

in the directions of arrows **153a**, **153b**, **153c**, and **153d**

(see **FIG. 20B**),

in the directions of arrows **154a**, **154b**, **154c**, and **154d**

(see **FIG. 20C**),

in the directions of arrows **155a**, **155b**, **155c**, and **155d**

(see **FIG. 20D**),

in the directions of arrows **156a**, **156b**, **156c**, and **156d**

(see **FIG. 20E**),

in the directions of arrows **157a**, **157b**, **157c**, and **157d**

(see **FIG. 20F**),

in the directions of arrows **158a** and **158b**

(see **FIG. 20G**),

in the directions of arrows **159a** and **159b**

(see **FIG. 20H**).

38) Multi-function hook-rope-stake-pulley-wheel systems **138** is for performing the combined functions of its components.

39) Hooks **139** respectively are for:

Hooking ropes **141** thereon

(see **FIG. 21A**, **FIG. 21B**, **FIG. 21C**, and **FIG. 21D**).

40) Rope-and-stake holes **140** respectively are for:

a) Threading ropes **141** therethrough

(see **FIG. 21A**, **FIG. 21B**, **FIG. 21C**, and **FIG. 21D**); and

b) Hammering stakes **142** therethrough.

41) Ropes **141** respectively are for:

a) Being hooked on at least one of hooks **139**; and

b) Being hooked on at least one of four lower posts **121**.

42) Stakes **142** respectively are for:

Attaching the adjustable-central-canopy adjustable-surround-canopy adjustable-

awning single-central-innersurface-square-lock popup to the ground.

43) Pulley-wheel arms **143** respectively are for:

Attaching pulley-wheel axles **144** to hooks **139**.

44) Pulley-wheel axles **144** respectively are for:

Attaching pulley-wheels **145** to pulley-wheel arms **143**.

45) Pulley-wheels **145** respectively are for:

a) Functioning as pulley to wrap ropes **141** thereon

to reduce rope-pulling forces needed to pull on ropes **141** to stretch adjustable ring canopy **102** and/or adjustable surrounding awning **135** (see **FIG. 21C**, **FIG. 21D**, **FIG. 22A** and **FIG. 22B**);

b) Functioning as wheel

to allow the adjustable-central-canopy adjustable-surround-canopy adjustable-awning single-central-innersurface-square-lock popup to be rolled along the ground or a surface for transportation and storage (see **FIG. 16B**); and

c) Working together with rope-and-stake holes **140** to tie four lower posts **121** together

to prevent four lower posts **121** from spreading outwards when there is heavy snow sitting on top of the adjustable-central-canopy adjustable-surround-canopy adjustable-awning single-central-innersurface-square-lock popup, or

when there are heavy items hung on the adjustable-central-canopy adjustable-surround-canopy adjustable-awning single-central-innersurface-square-lock popup
(see **FIG. 22A**, **FIG. 22B**, **FIG. 22C** and **FIG. 23**).

VARIATION

Any component of the adjustable-central-canopy adjustable-surround-canopy adjustable-awning single-central-innersurface-square-lock popup can have any shape and size.
Any component of the adjustable-central-canopy adjustable-surround-canopy adjustable-awning single-central-innersurface-square-lock popup can be replaced with an equivalent component. Any component of the adjustable-central-canopy adjustable-surround-canopy adjustable-awning single-central-innersurface-square-lock popup can be made of any material(s) or any combination of any materials. Any component of the adjustable-central-canopy adjustable-surround-canopy adjustable-awning single-central-innersurface-square-lock popup can be made of any flexible, semi-flexible, bendable, semi-bendable, stretchable, semi-stretchable, rigid, or semi-rigid material(s). Any component-attaching method of the adjustable-central-canopy adjustable-surround-canopy adjustable-awning single-central-innersurface-square-lock popup can be replaced with an equivalent method. For example, **FIG. 24A**, **FIG. 24B**, **24C**, and **FIG. 24D** illustrate perspective and front views of equivalent variations of adjustable ring canopy **102** and adjustable surrounding awning **135**, which redirect wind and smoke into and out of the inside of the adjustable-central-canopy adjustable-surround-canopy adjustable-awning single-central-innersurface-square-lock popup, in the directions of arrows **160a, 160b, 160c** and **160d**. For example, **FIG. 25A** and **FIG. 25B** illustrate cross-sectional views of equivalent variations of central-innersurface-

locking double-C-shaped spring **127**. Each of the equivalent variations can be a central-innersurface-locking V-shaped spring having one or two nipples. For example**, FIG. 26A** illustrates a perspective view of how the central-innersurface-locking wind-and-smoke redirecting adjustable-central-canopy system **123** is assembled with a central round post. For example, **FIG. 26B** illustrates a perspective view of an equivalent variation of the adjustable central-canopy adjustable-surround-canopy adjustable-awning single-central-innersurface-square-lock popup having no wind-and-smoke-redirecting adjustable-surrounding-awning system **134** and no pulley-wheels **145**. For example, **FIG. 27A**, **FIG. 27B**, **FIG. 27C**, **FIG. 27D**, **FIG. 27E**, and **FIG. 27F** illustrate perspective, cross-sectional, and front views of equivalent variations **161a** and **161b** of two buttons **132**. Equivalent variations **161a** and **161b** each are formed into an L shape and each are pivotably attached to central-innersurface-locking adjustable ring **129** for pushing central-innersurface-locking double nipples **128** back inside central-post holes **126** to allow central-innersurface-locking adjustable ring **129** to slide up and down central square post **125**. For example, **FIG. 28A**, **FIG. 28B**, **FIG. 28C**, and **FIG. 28D** illustrate front and perspective views of equivalent variations of the adjustable-central-canopy adjustable-surround-canopy adjustable-awning single-central-innersurface-square-lock popup, hooks **139**, and pulley-wheels **145**.

MAJOR ADVANTAGES OF THE INVENTION

The present invention substantially departs from the conventional concepts and designs of the prior art. In doing so, the present invention provides **the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup (having: a) Post-centering tick-preventing water-discharging wind-and-smoke-redirecting ring-canopy system, b) Central-innersurface-locking wind-and-**

smoke-redirecting central-canopy system, c) Wind-and-smoke-redirecting surrounding-awning system, and d) Multi-function hook-rope-stake-pulley-wheel system), having many unique and significant features, functions, and advantages, which overcome all the disadvantages of the prior art, as follows:

1) The present invention provides an adjustable-central-canopy adjustable- ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup, having
adjustable ring canopy 102,
adjustable central canopy 124, **and**
adjustable surrounding awning 135.
Therefore, the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup:

a) Can provide shade to occupants,
to prevent sunburn;

b) Can be adjusted up and down to increase airflow into and out of the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup,
to keep occupants cool;

c) Can help with airflow out of the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup,
to assist in smoke exiting the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-

central-innersurface-square-lock popup; and

d) Can provide rain protection,

to keep occupants dry.

2) The present invention further provides an adjustable-central-canopy adjustable-surround-canopy adjustable-awning single-central-innersurface-square-lock popup, having **central-innersurface-locking adjustable ring 129**.

Therefore, the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup:

a) Can lock central square post **125** to the rest of the canopy structure,

to increase overall strength of the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup;

b) Can lock canopy together,

to prevent the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup from collapsing;

c) Can decrease the total number of locking points,

to make setup easier; and

d) Can lock four post-height-adjusting nipples **120** and central square post **125 on the same plane** as central-innersurface-locking adjustable ring **129** and two button tunnels **131**,

to prevent four post-height-adjusting nipples **120** from twisting and bending out of two button tunnels **131** when the wind tries to twist and bend the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup..

3) The present invention further provides an adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface- square-lock popup, having

pulley-wheels 145.

Therefore, the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup:

a) Can be used as pulleys to thread ropes **141**,

to tighten canopies;

b) Can be used to roll the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup along the ground when in collapsed configuration,

to make transportation easier;

c) Can be used to assist in moving the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup when fully erected,

to help with relocating the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup; and

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d) Can be used with ropes **141** to connect four lower posts **121** together and other popups to the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup,

to strengthen and expand structure and to keep four lower posts **121** from bending out.

4) The present invention further provides an adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface- square-lock popup, having

tick-preventing downward teeth 117.

Therefore, the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup:

a) Can prevent ticks from getting inside four upper posts **112** and four lower posts **121**,

to protect occupants from disease;

b) Can help protect from weather elements getting up inside four upper posts **112** and four lower posts **121**,

to help prevent against rust and increase the lifetime of the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup;

c) Can assist in water drainage,

to help prevent rusting; and

d) Can provide additional structure to four sleeves **115**,

to increase strength of four upper posts **112** and four lower posts **121**.

5) The present invention further provides an adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface- square-lock popup, having

post-centering clamps 116.

Therefore, the adjustable-central-canopy adjustable-surround-canopy adjustable-awning single-central-innersurface-square-lock popup:

a) Can center four lower posts **121** within four upper posts **112**,

to help with assembly and disassembly;

b) Can help keep ticks from entering into four upper posts **112** and four lower posts **121**,

to protect occupants;

c) Can provide addition strength and stability to four upper posts **112** and four lower posts **121**,

to keep occupants safe and increase the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup's lifetime; and

d) Can keep four upper posts **112** and four lower posts **121** from binding

to help with adjusting the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup up and down.

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6) The present invention further provides an adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface- square-lock popup, having

central square post 125.

Therefore, the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup:

a) Can provide lateral strength to the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup,

to keep the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup from radially twisting;

b) Can lock canopy structure together,

to prevent canopy from collapsing;

c) Can provide multiple adjustment locations,

to give options for setup; and

d) Can decrease the total number of overall locking points,

to make setup easier.

7) The present invention further provides an adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface- square-lock popup, having

lead-in funnels 130.

Therefore, the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup:

a) Can automatically guide central square post **125** into central-innersurface-locking adjustable ring **129**,

to help with setup;

b) Can automatically guide central square post **125** into both top and bottom of central-innersurface-locking adjustable ring **129**,

to make up and down adjustments easier;

c) Can automatically depress central-innersurface-locking double nipples **128**,

to make locking central square post **125** easier; and

d) Can automatically provide less friction between central-innersurface-locking adjustable ring **129** and central square post **125**,

to make setup and adjustment easier.

8) The present invention further provides an adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface- square-lock popup, having

water-discharging grooves 118.

Therefore, the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup:

a) Can allow water to drain from four upper posts **112** and four lower posts **121**,

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to prevent four upper posts **112** and four lower posts **121** from rusting;

b) Can prevent water from getting into posts,

to help prolong the life of the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup;

c) Can help protect against insects,

to help protect occupants; and

d) Can provide addition structure to sleeves,

to increase strength of four upper posts **112** and four lower posts **121**.

9) The present invention further provides an adjustable-central- canopy adjustable-ring-canopy adjustable-surrounding awning single-central- innersurface-square-lock popup, having

foldable adjustable awning trusses 136.

Therefore, the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup:

a) Can provide support for surrounding awning **135**,

to keep surrounding awning **135** fabric from drooping;

b) Can adjust surrounding awning **135** up,

to redirect airflow out;

c) Can adjust surrounding awning **135** down,

to redirect airflow down; and

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d) Can provide additional support to the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup,

to strengthen overall structure.

10) The present invention further provides an adjustable-central- canopy adjustable-ring-canopy adjustable-surrounding awning single-central- innersurface-square-lock popup, having

four sleeves 115.

Therefore, the adjustable-central-canopy adjustable-surround-canopy adjustable-awning single-central-innersurface-square-lock popup:

a) Can prevent four upper posts **112** and four lower posts **121** from scratching each other

to prevent premature wear or rusting;

b) Can minimize friction between four upper posts **112** and four lower posts **121**,

to make raising and lowing easier;

c) Can protect exposed joints of four upper posts **112** and four lower posts **121**,

to prevent rusting and increase lifetime; and

d) Can join four upper posts **112** and four lower posts **121** together

to provide additional strength and support for posts.

11) The present invention further provides an adjustable-central-canopy adjustable-ring-canopy

adjustable-surrounding awning single-central- innersurface-square-lock popup, having **rope-and-stake holes 140**.

Therefore, the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup:

a) Can be used to thread ropes **141** through,
   to use with either pulley wheels or hooks;
b) Can be used to drive stake **142** through into the ground,
   to secure the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup to the ground;
c) Can be used as a rope pulley,
   to be used with other pulley-wheels **145** and ropes **141**; and
d) Can be used as a tie-off location for ropes **141**,
   to increase customization options for ropes **141** and pulley wheels **145**.

12) The present invention further provides an adjustable-central- canopy adjustable-ring-canopy adjustable-surrounding awning single-central- innersurface-square-lock popup, having

hooks 139.

Therefore, the adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding awning single-central-innersurface-square-lock popup:

a) Can hook canopy ropes **141** on hooks **139**

to lock ropes **141** and all canopies and awning to keep them from slipping;

b) Can provide a location of rope-and-stake holes **140**,

to help with staking four lower posts **121** to the ground;

c) Can be used as a foot step,

to help with setup and to drive four lower posts **121** into the ground; and

d) Can hook ropes **141** on hooks **139** from four lower posts **121**,

to strengthen structure and keep four lower posts **121** from bending out.

The discussion of documents, acts, materials, devices, articles and the like is included in this specification solely for the purpose of providing a context for the present invention. It is not suggested or represented that any or all of these matters formed part of the prior art base or were common general knowledge in the field relevant to the present invention as it existed before the priority date of each claim of this application.

Throughout the description and claims of this specification, the word "comprise" and variations of the word, such as "comprising" and "comprises", is not intended to exclude other additives, components, integers or steps.

The claims defining the invention are as follows:

1. An adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding-awning single-central-innersurface-square-lock popup comprising:

an adjustable ring canopy;

a central intersector;

foldable top trusses

respectively attached to said adjustable ring canopy and

respectively and pivotably bolted to said central intersector;

top-truss connectors

respectively and pivotably bolted to said foldable top trusses;

foldable corner trusses

respectively and pivotably bolted to said foldable top trusses;

foldable side trusses

respectively and pivotably are bolted to one another;

four upper corner intersectors

respectively and pivotably bolted to said foldable top trusses and

respectively and pivotably bolted to said foldable side trusses;

four upper posts

respectively attached to said four upper corner intersectors,

said four upper posts

each having

a bottom end;

four lower corner intersectors

respectively bolted to said foldable corner trusses,

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respectively bolted to said foldable side trusses, and respectively slid on said four upper posts;

four sleeves

respectively slid on said bottom end of said four upper posts;

post-centering clamps

respectively molded to said four sleeves;

tick-preventing downward teeth

respectively molded to said four sleeves;

water-discharging grooves

respectively molded to said four sleeves;

four post-height-adjusting spring-loaded rockers

respectively attached to said four sleeves;

four post-height-adjusting nipples

respectively molded to said four post-height-adjusting spring-loaded rockers;

four lower posts

respectively and slidably inserted inside said four upper posts;

post-height-adjusting holes

respectively formed in said four upper posts and said four lower posts;

an adjustable central canopy;

a central square post

attached to said central intersector;

central-post holes

respectively formed in said central square post;

a central-innersurface-locking double-C-shaped spring

inserted inside said central square post;

central-innersurface-locking double nipples

respectively molded to said central-innersurface-locking double-C-shaped spring;

a central-innersurface-locking adjustable ring

adjustably and slidably locked on and unlocked from said central square post, said central-innersurface-locking adjustable ring

having

an outer surface, an inner surface, and two ends;

lead-in funnels

respectively molded to one of said two ends of said central-innersurface-locking adjustable ring;

two button tunnels

respectively molded from said outer surface to said inner surface of said central-innersurface-locking adjustable ring;

two buttons

respectively snapped into said two button tunnels;

foldable adjustable central trusses

respectively and pivotably bolted to said foldable top trusses,

respectively attached to said adjustable central canopy, and

respectively and pivotably bolted to said central-innersurface-locking adjustable ring;

an adjustable surrounding awning;

foldable adjustable awning trusses

respectively and pivotably bolted to said top-truss connectors or

respectively and pivotably bolted to said foldable top trusses, and

respectively attached to said adjustable surrounding awning;

rotatable awning-truss sleeves

respectively and pivotably attached to said four upper posts and

respectively and slidably slid on said foldable adjustable awning trusses;

hooks

respectively welded or molded to said four lower posts;

rope-and-stake holes

respectively formed in said hooks; and

ropes

respectively threaded through at least one of said rope-and-stake holes and

respectively hooked on at least one of said four lower posts or said hooks,

wherein:

said adjustable ring canopy

is for

redirecting wind, smoke, and light into and out of the popup,

said adjustable central canopy

is for

redirecting wind, smoke, and light into and out of the popup,

said adjustable surrounding awning

is for

redirecting wind, smoke, and light into and out of the popup,

said post-centering clamps

respectively are for

centering said four lower posts inside said four upper posts,

said tick-preventing downward teeth

respectively are for

preventing ticks from getting inside said four upper posts and said four lower posts,

said water-discharging grooves

respectively are for

allowing water to discharge out of said four upper posts and said four lower posts,

said central-innersurface-locking adjustable ring

is for:

sliding up on said central square post to snap-lock on some of said central-innersurface-locking double nipples

to push up said central trusses, which push up said top trusses to raise said adjustable central canopy and said adjustable ring canopy, and

to push up said top trusses, which rotate said awning trusses to lower said adjustable surrounding awning,

sliding down on said central square post to snap-lock on some other of said central-innersurface-locking double nipples

to pull down said central trusses, which pull down said top trusses to lower said adjustable ring canopy and said adjustable central canopy, and

to pull down said top trusses, which rotate said awning trusses to raise said adjustable surrounding awning,

preventing the popup from radially twisting clockwise or counterclockwise,

and

locking and unlocking the popup after the popup is folded or unfolded,

said central square post

is for

preventing the popup from radially twisting clockwise or counterclockwise.

2. The adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding-awning single-central-innersurface-square-lock popup of claim **1**,

further comprising:

pulley-wheel arms

respectively welded or molded to said hooks,

pulley-wheels, and

pulley-wheel axles

said pulley-wheels respectively slid on said pulley-wheel axles,

said pulley-wheel axles respectively attached to and between said pulley-wheel arms,

wherein

said pulley-wheels

respectively are for

functioning as pulleys to wrap said ropes thereon,

functioning as wheel to allow the popup to be rolled along the ground, and

working together with said rope-and-stake holes to tie said four lower posts

together to prevent said four lower posts from spreading outwards.

3. The adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding-awning single-central-innersurface-square-lock popup of claim **1**,

further comprising

four corner-intersector stoppers

respectively attached to said four upper posts above said four lower corner intersectors,

wherein

said four corner-intersector stoppers

respectively are for

preventing said four lower corner intersectors from sliding upward.

4. The adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding-awning single-central-innersurface-square-lock popup of claim **1**,

further comprising

stakes

respectively hammered through said rope-and-stake holes,

wherein

said stakes

respectively are for

attaching the popup to the ground.

5. The adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding-awning single-central-innersurface-square-lock popup of claim **1**,

wherein

said adjustable surrounding awning

is formed into a square-ring shape,

wherein

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said adjustable ring canopy

is formed into a square-ring shape.

6. The adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding-awning single-central-innersurface-square-lock popup of claim **1,**

wherein

said two buttons

each are made of metal or plastic material.

7. The adjustable-central-canopy adjustable-ring-canopy adjustable-surrounding-awning single-central-innersurface-square-lock popup of claim **1,**

wherein

said central-innersurface-locking double nipples

each are made of metal or plastic material.

8. A single-central-innersurface-square-lock popup comprising:

an adjustable ring canopy;

a central intersector;

foldable top trusses

respectively attached to said adjustable ring canopy and

respectively and pivotably bolted to said central intersector;

top-truss connectors

respectively and pivotably bolted to said foldable top trusses;

foldable corner trusses

respectively and pivotably bolted to said foldable top trusses;

foldable side trusses

respectively and pivotably are bolted to one another;

four upper corner intersectors

respectively and pivotably bolted to said foldable top trusses and

respectively and pivotably bolted to said foldable side trusses;

four upper posts

respectively attached to said four upper corner intersectors,

said four upper posts

each having

a bottom end;

four lower corner intersectors

respectively bolted to said foldable corner trusses,

respectively bolted to said foldable side trusses, and

respectively slid on said four upper posts;

four sleeves

respectively slid on said bottom end of said four upper posts;

post-centering clamps

respectively molded to said four sleeves;

four post-height-adjusting spring-loaded rockers

respectively attached to said four sleeves;

four post-height-adjusting nipples

respectively molded to said four post-height-adjusting spring-loaded rockers;

four lower posts

respectively and slidably inserted inside said four upper posts;

post-height-adjusting holes

respectively formed in said four upper posts and said four lower

posts;

an adjustable central canopy;

a central square post

attached to said central intersector;

central-post holes

respectively formed in said central square post;

a central-locking spring

inserted inside said central square post;

central-locking nipples

respectively molded to said central-locking spring;

a central-locking ring

adjustably and slidably locked on and unlocked from said central square post,

said central-locking ring

having

an outer surface, an inner surface, and two ends;

two button tunnels

respectively molded from said outer surface to said inner surface of said

central- locking ring;

two buttons

respectively snapped into said two button tunnels;

foldable adjustable central trusses

respectively and pivotably bolted to said foldable top trusses,

respectively and pivotably bolted to said central locking ring, and

respectively attached to said adjustable central canopy;

an adjustable surrounding awning;

foldable adjustable awning trusses

respectively and pivotably bolted to said top-truss connectors or

respectively and pivotably bolted to said foldable top trusses, and

respectively attached to said adjustable surrounding awning;

rotatable awning-truss sleeves

respectively and pivotably attached to said four upper posts and

respectively and slidably slid on said foldable adjustable awning

trusses; and

hooks

respectively welded or molded to said four lower posts,

wherein:

said adjustable ring canopy

is for

redirecting wind, smoke, and light into and out of the popup,

said adjustable central canopy

is for

redirecting wind, smoke, and light into and out of the popup,

said adjustable surrounding awning

is for

redirecting wind, smoke, and light into and out of the popup,

said post-centering clamps

respectively are for

centering said four lower posts inside said four upper posts,

said central-locking ring

is for:

sliding up on said central square post to snap-lock on

some of said central-locking nipples

to push up said central trusses, which push up said top trusses

to raise said adjustable central canopy and said adjustable ring canopy,

and

to push up said top trusses, which rotate said awning trusses

to lower said adjustable surrounding awning,

sliding down on said central square post to snap-lock on

some other of said central-locking nipples

to pull down said central trusses, which pull down said top trusses

to lower said adjustable ring canopy and said adjustable central canopy,

and

to pull down said top trusses, which rotate said awning trusses

to raise said adjustable surrounding awning,

preventing the popup from radially twisting clockwise or counterclockwise, and

locking and unlocking the popup after the popup is folded or unfolded,

said central square post

is for

preventing the popup from radially twisting clockwise or counterclockwise.

9. The single-central-innersurface-square-lock popup of claim **8**,

further comprising:

pulley-wheel arms

respectively welded or molded to said hooks,

pulley-wheels, and

pulley-wheel axles,

said pulley-wheels respectively slid on said pulley-wheel axles,

said pulley-wheel axles respectively attached to and between said pulley-wheel arms,

wherein

said pulley-wheels

respectively are for

functioning as pulleys to wrap said ropes thereon,

functioning as wheel to allow the popup to be rolled along the ground, and

working together with said rope-and-stake holes to tie said four lower posts together to prevent said four lower posts from spreading outwards.

10. The single-central-innersurface-square-lock popup of claim **8**,

further comprising

four corner-intersector stoppers

respectively attached to said four upper posts above said four lower corner intersectors,

wherein

said four corner-intersector stoppers

respectively are for

preventing said four lower corner intersectors from sliding upward.

11. The single-central-innersurface-square-lock popup of claim **8**,

further comprising:

rope-and-stake holes

respectively formed in said hooks, and

stakes

respectively hammered through said rope-and-stake holes,

wherein

said stakes

respectively are for

attaching the popup to the ground.

12. The single-central-innersurface-square-lock popup of claim **8**,

wherein

said adjustable surrounding awning

is formed into a square-ring shape,

wherein

said adjustable ring canopy

is formed into a square-ring shape.

13. The single-central-innersurface-square-lock popup of claim **8**,

wherein

said two buttons

each are made of metal or plastic material.

14. The single-central-innersurface-square-lock-popup of claim **8**,

wherein

said central-locking nipples

each are made of metal or plastic material.

15. A multiple-adjustable-canopy central-lock popup comprising:

an adjustable ring canopy;

a central intersector;

foldable top trusses

respectively attached to said adjustable ring canopy and

respectively and pivotably bolted to said central intersector;

top-truss connectors

respectively and pivotably bolted to said foldable top trusses;

foldable corner trusses

respectively and pivotably bolted to said foldable top trusses;

foldable side trusses

respectively and pivotably are bolted to one another;

four upper corner intersectors

respectively and pivotably bolted to said foldable top trusses and

respectively and pivotably bolted to said foldable side trusses;

four upper posts

respectively attached to said four upper corner intersectors,

said four upper posts

each having

a bottom end;

four lower corner intersectors

respectively bolted to said foldable corner trusses,

respectively bolted to said foldable side trusses, and

respectively slid on said four upper posts;

four sleeves

respectively slid on said bottom end of said four upper posts;

four post-height-adjusting spring-loaded rockers

respectively attached to said four sleeves;

four post-height-adjusting nipples

respectively molded to said four post-height-adjusting spring-loaded rockers;

four lower posts

respectively and slidably inserted inside said four upper posts;

post-height-adjusting holes

respectively formed in said four upper posts and said four lower

posts;

an adjustable central canopy;

a central square post

attached to said central intersector;

central-post holes

respectively formed in said central square post;

a central-locking spring

inserted inside said central square post;

central-locking nipples

respectively molded to said central-locking spring;

a central-locking ring

adjustably and slidably locked on and unlocked from said central square post,

said central-locking ring

having

an outer surface, an inner surface, and two ends;

two button tunnels

respectively molded from said outer surface to said inner surface of said central-

locking ring;

two buttons

respectively attached to said two button tunnels;

foldable adjustable central trusses

respectively and pivotably bolted to said foldable top trusses,

respectively and pivotably bolted to said central-locking ring, and

respectively attached to said adjustable central canopy; and

hooks

respectively welded or molded to said four lower posts.

16. The multiple-adjustable-canopy central-lock popup of claim **15**,

further comprising:

pulley-wheel arms

respectively welded or molded to said hooks,

pulley-wheels, and

pulley-wheel axles,

said pulley-wheels respectively slid on said pulley-wheel axles,

said pulley-wheel axles respectively attached to and between said pulley-wheel arms,

wherein

said pulley-wheels

respectively are for

functioning as pulleys to wrap said ropes thereon,

functioning as wheel to allow the popup to be rolled along the ground, and

working together with said rope-and-stake holes to tie said four lower posts

together to prevent said four lower posts from spreading outwards.

17. The multiple-adjustable-canopy central-lock popup of claim **15**,

further comprising

four corner-intersector stoppers

respectively attached to said four upper posts above said four lower corner intersectors,

wherein

said four corner-intersector stoppers

respectively are for

preventing said four lower corner intersectors from sliding upward.

18. The multiple-adjustable-canopy central-lock popup of claim **15**,

further comprising:

rope-and-stake holes

respectively formed in said hooks, and

stakes

respectively hammered through said rope-and-stake holes,

wherein

said stakes

respectively are for

attaching the popup to the ground.

19. The multiple-adjustable-canopy central-lock popup of claim **15**,

wherein

said adjustable ring canopy

is formed into a square-ring shape.

20. The multiple-adjustable-canopy central-lock popup of claim 15,

wherein

said two buttons

each are made of metal or plastic material.

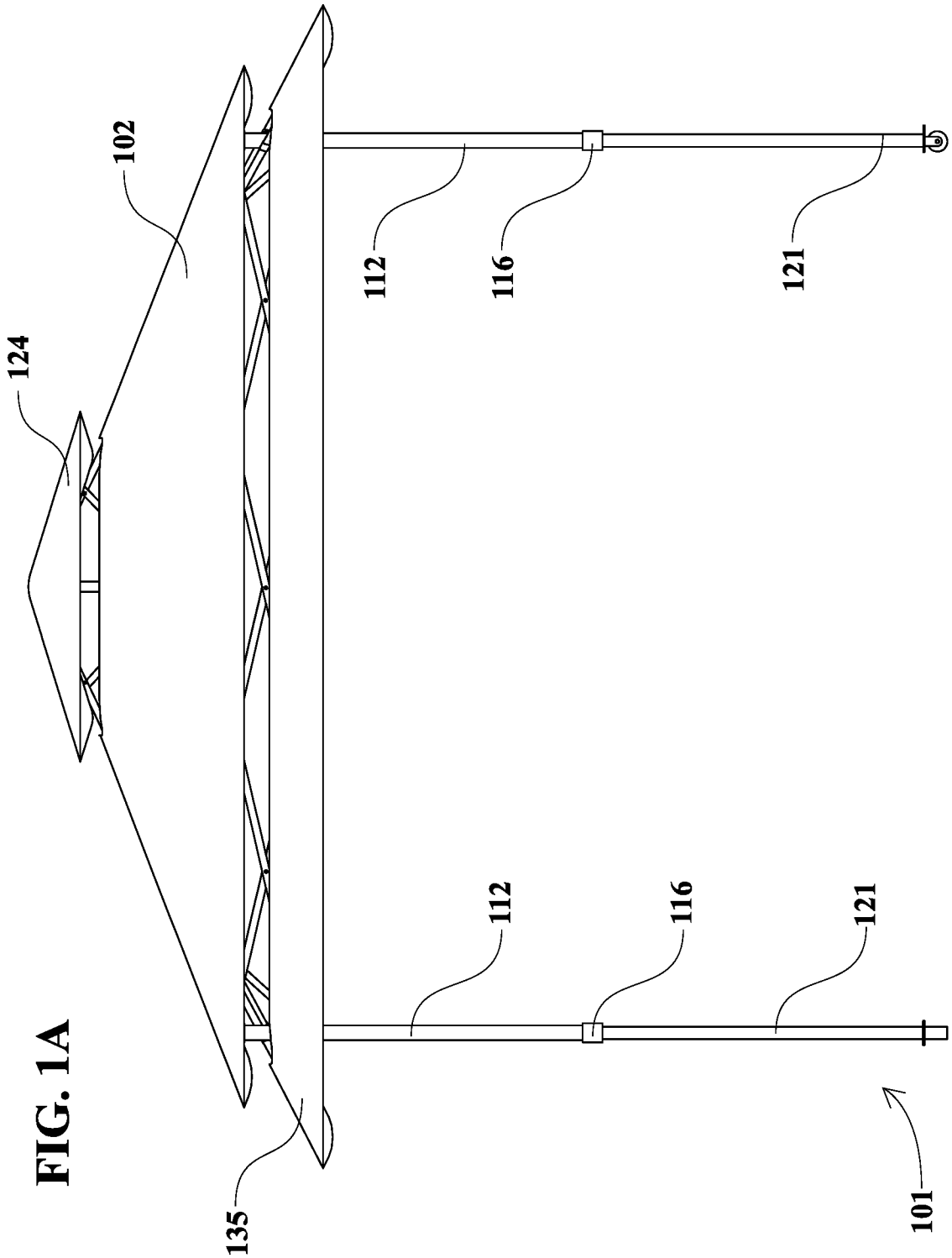


FIG. 1A

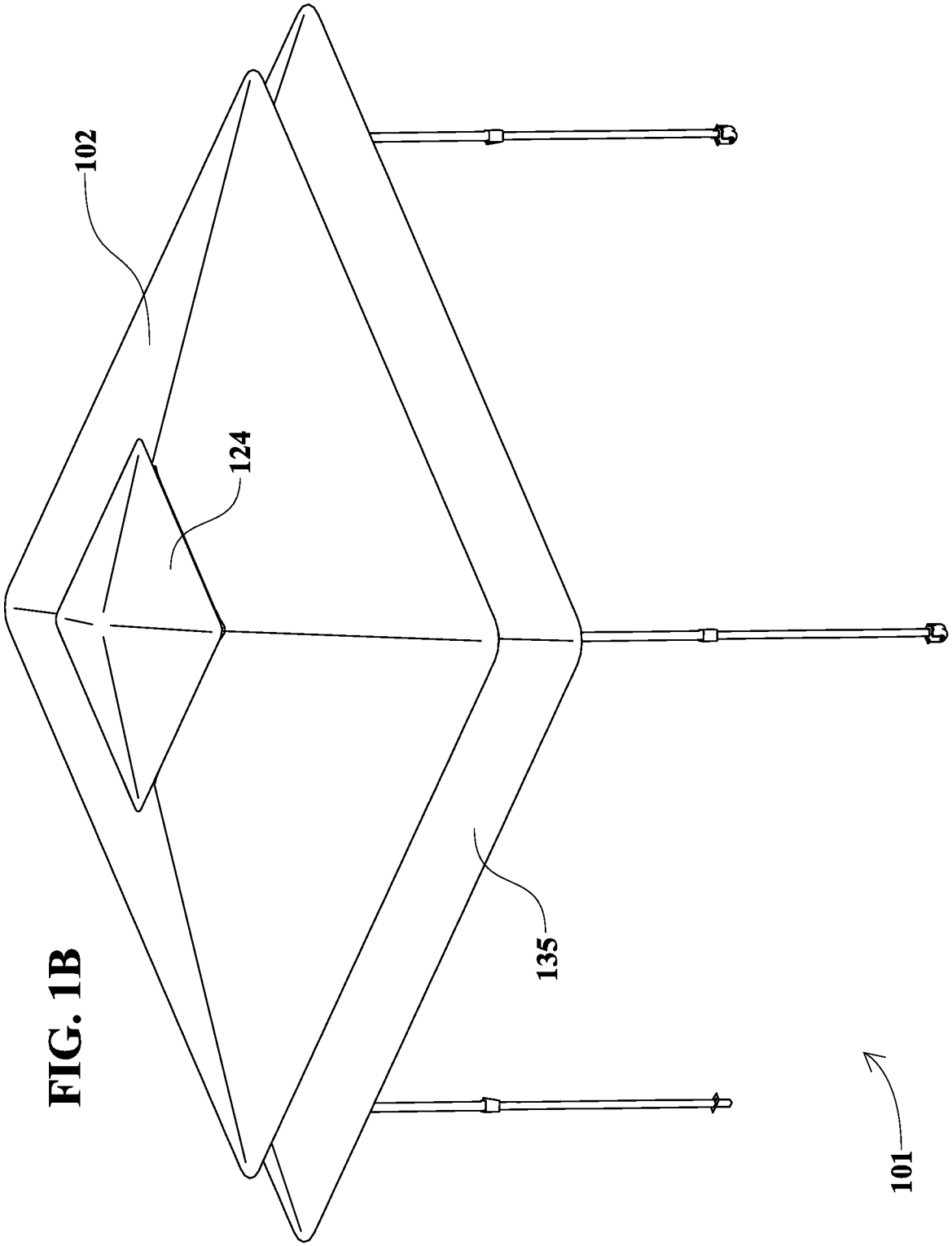


FIG. 1B

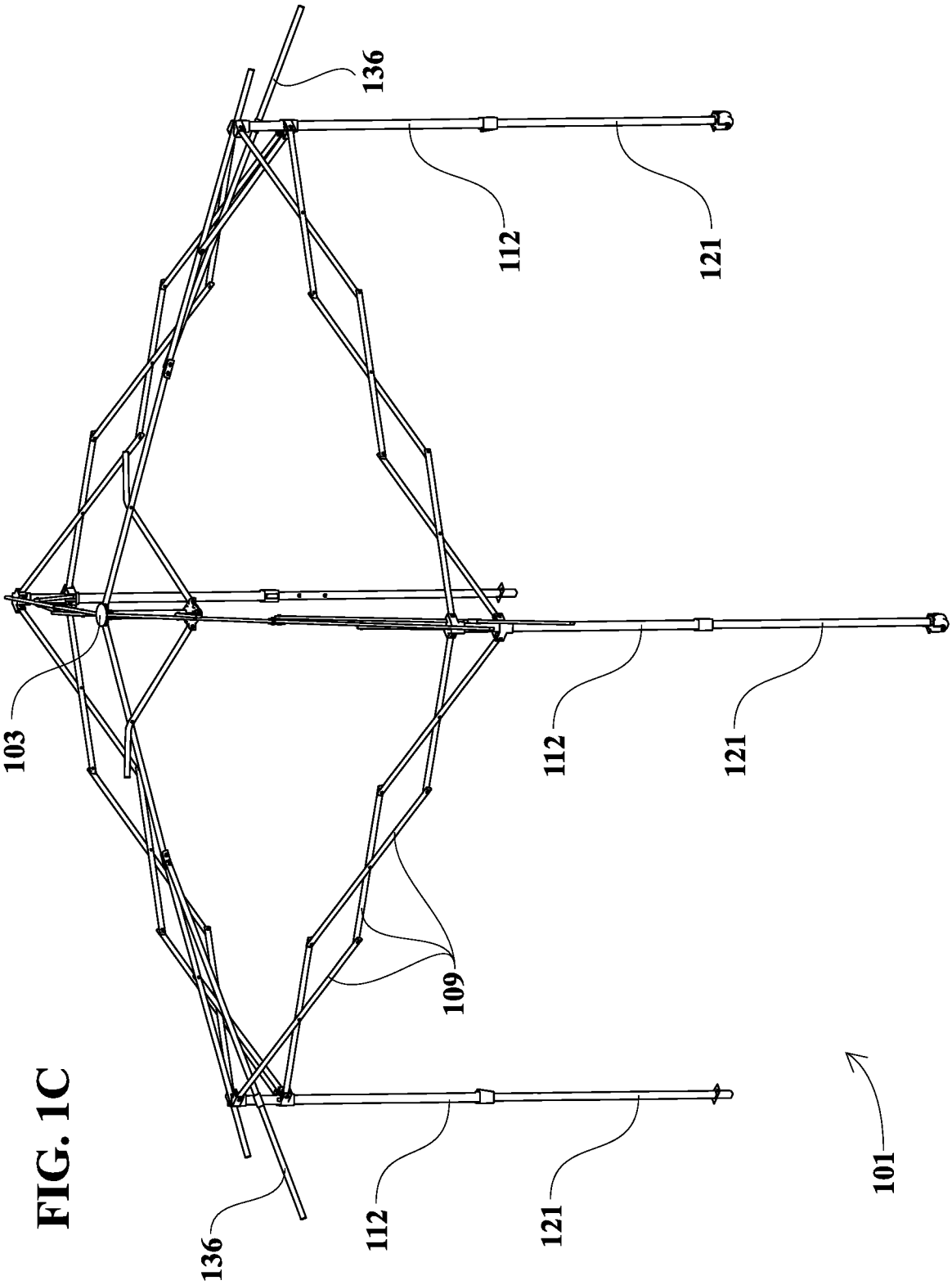


FIG. 1C

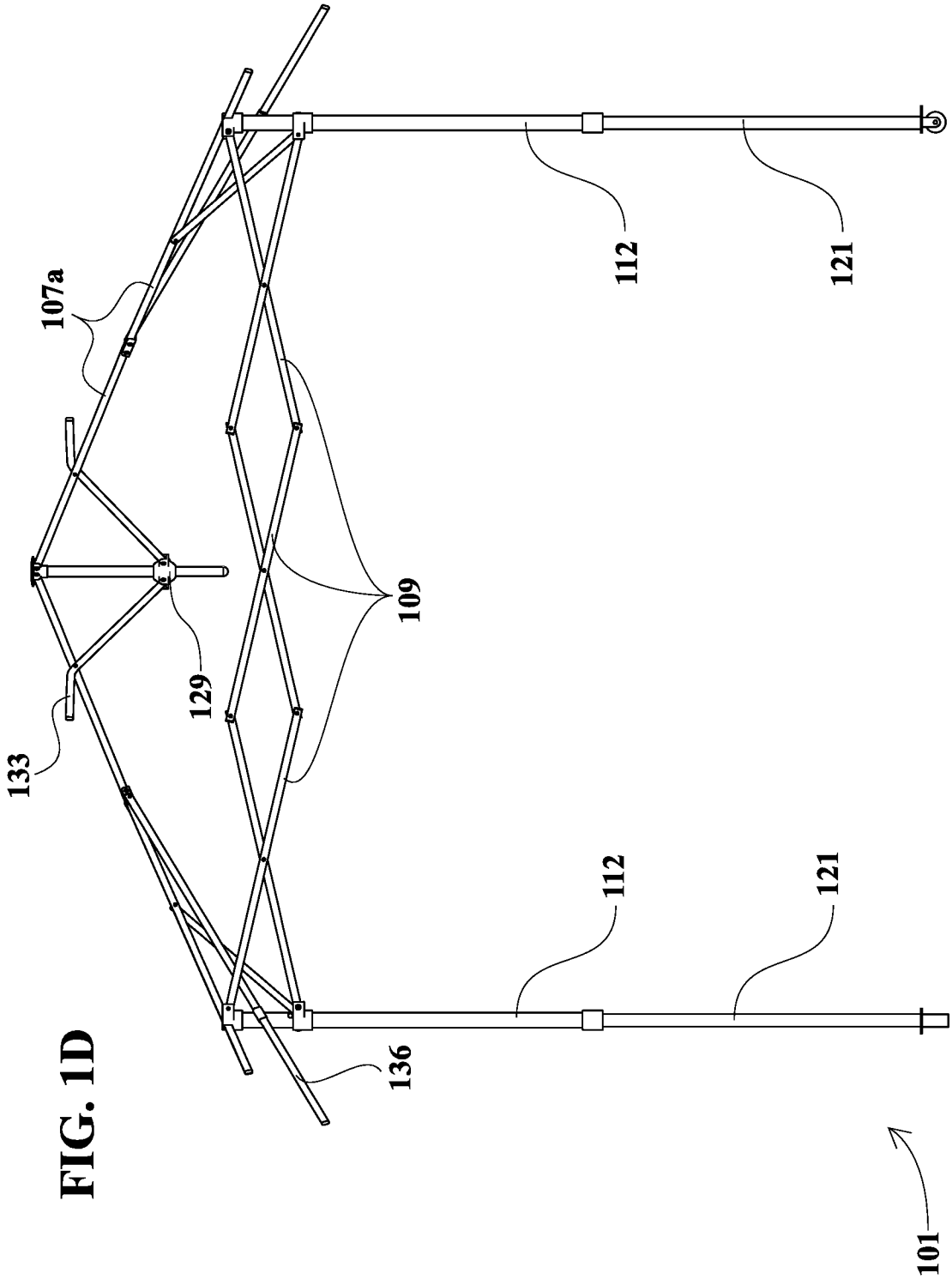


FIG. 1D

FIG. 2A

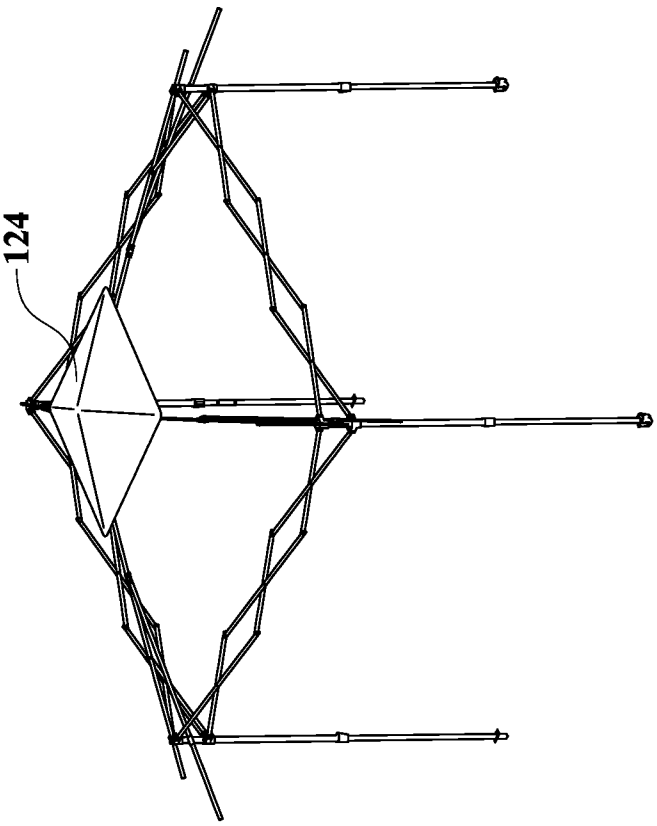
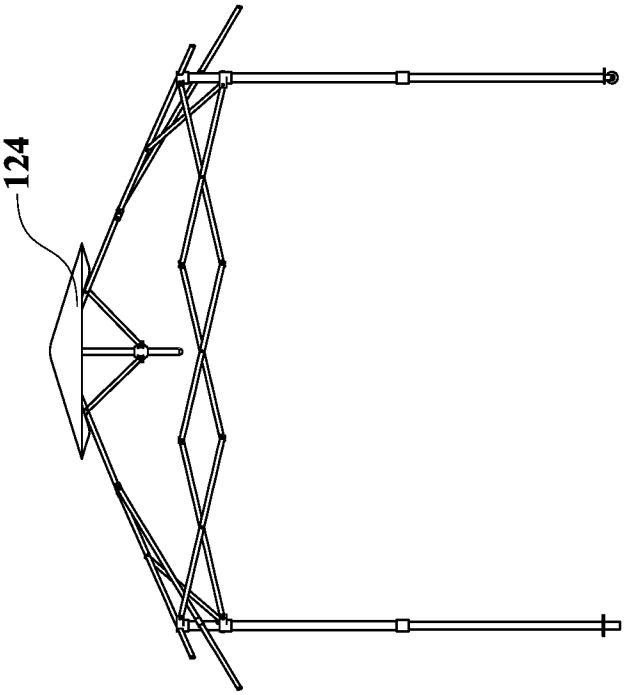


FIG. 2B



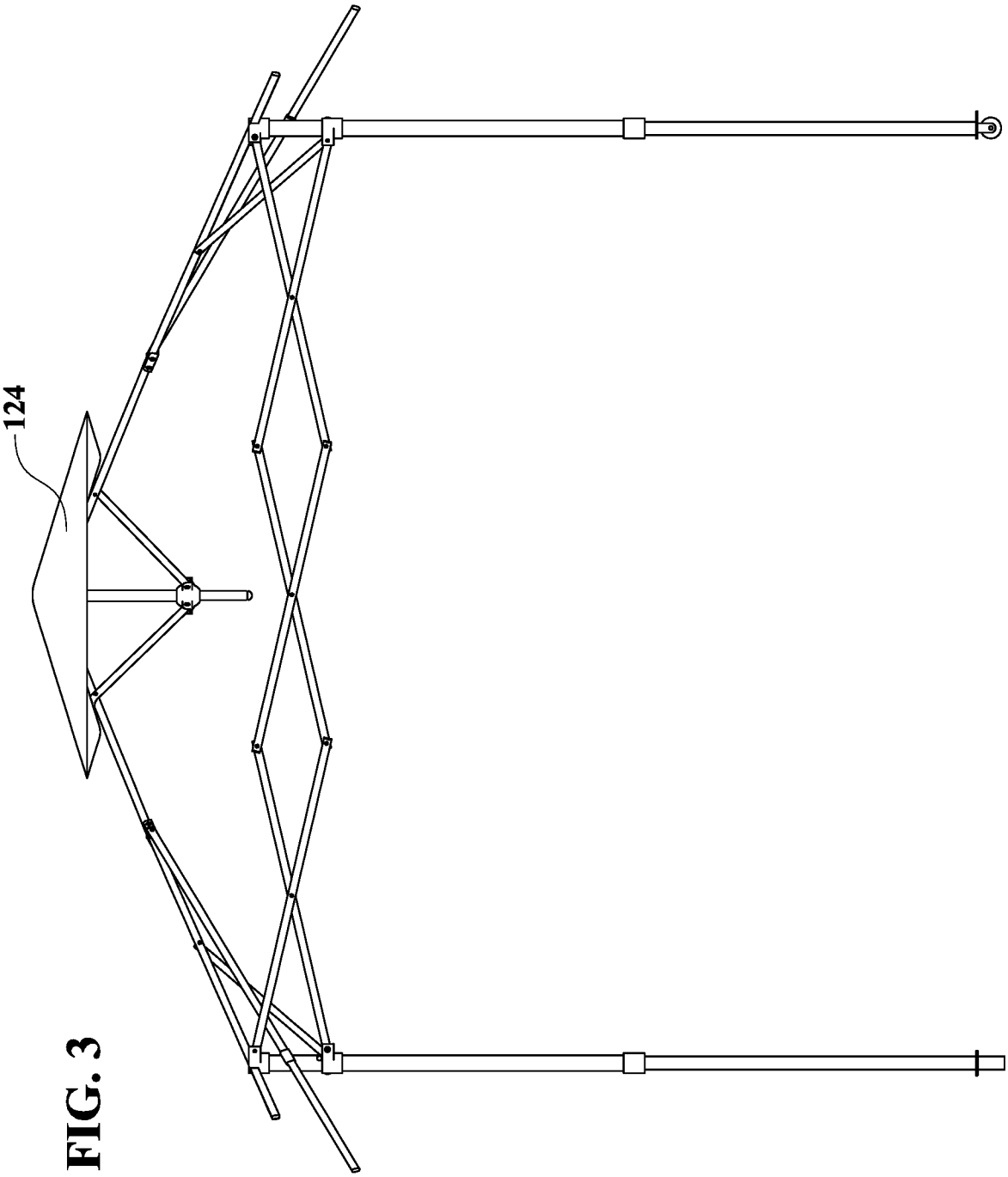


FIG. 3

FIG. 4A

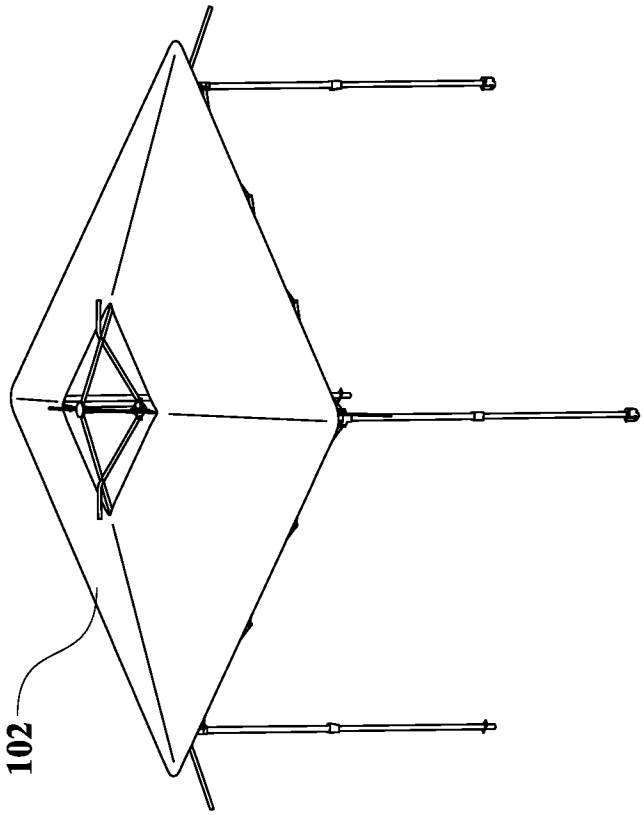
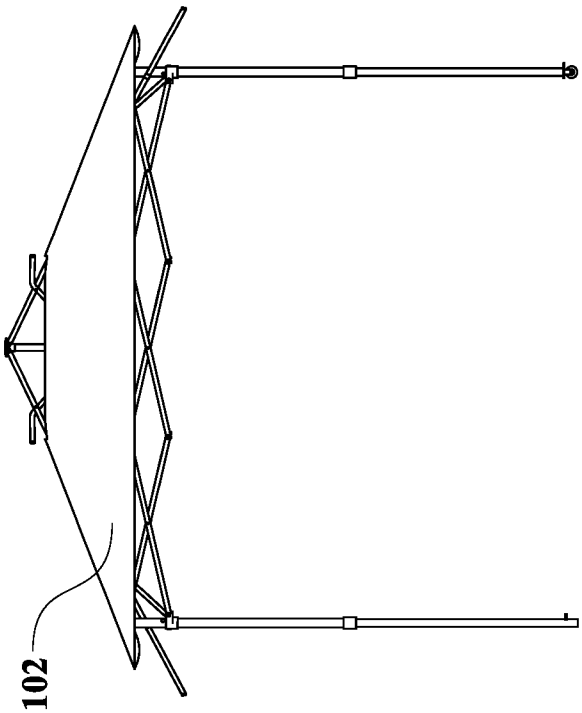


FIG. 4B



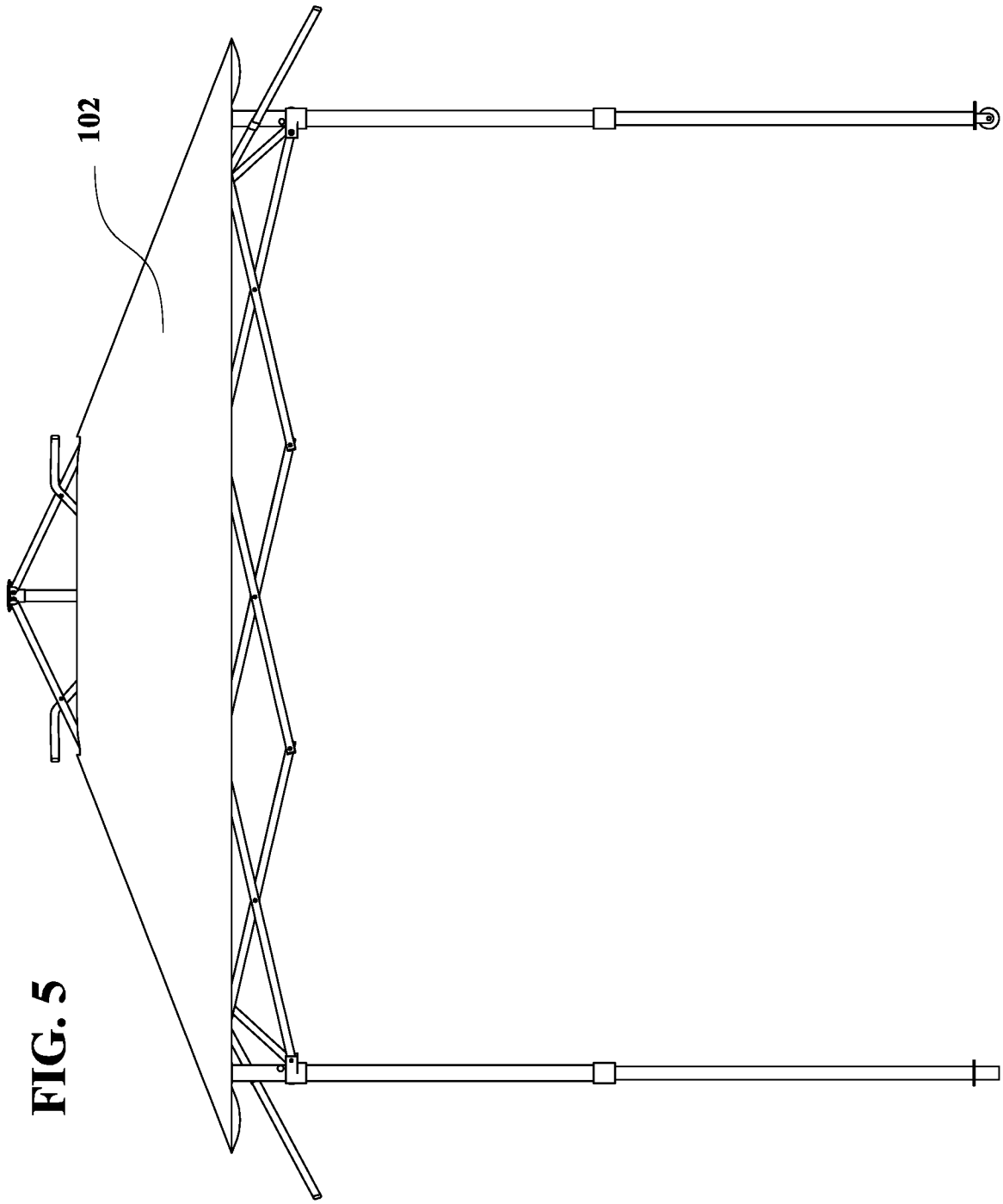


FIG. 5

FIG. 6A

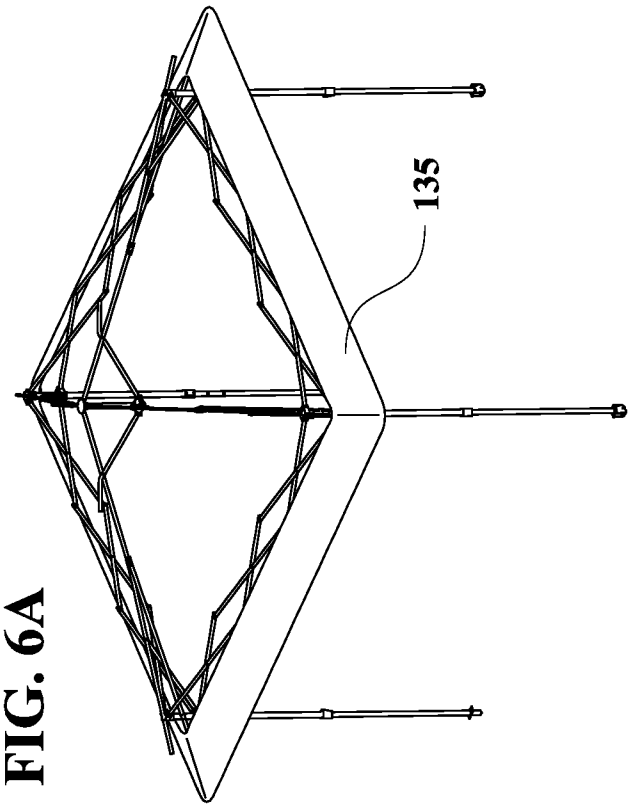
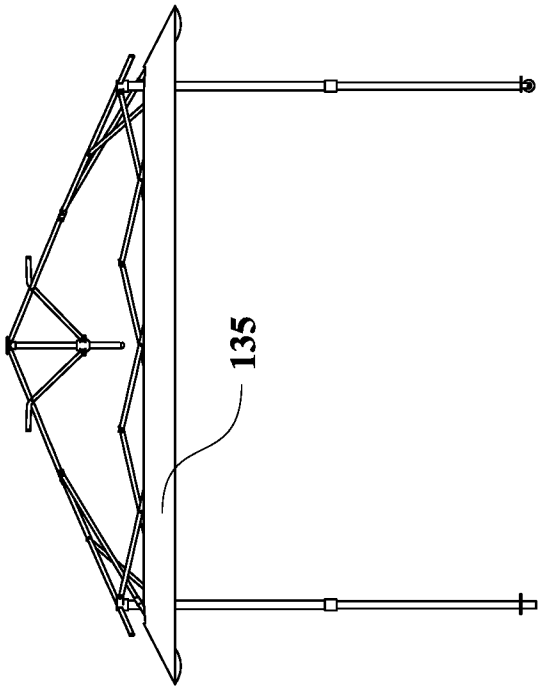


FIG. 6B



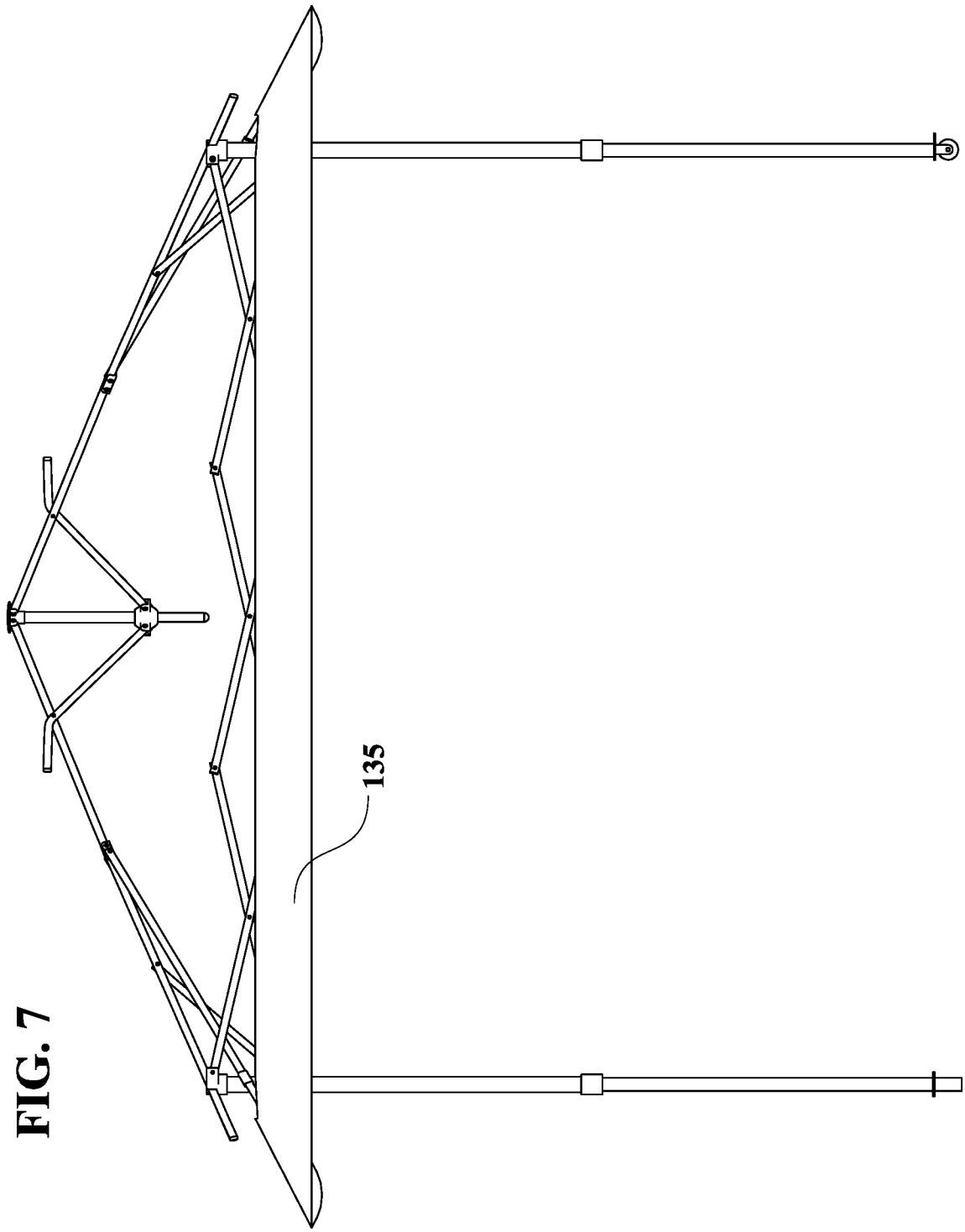


FIG. 7

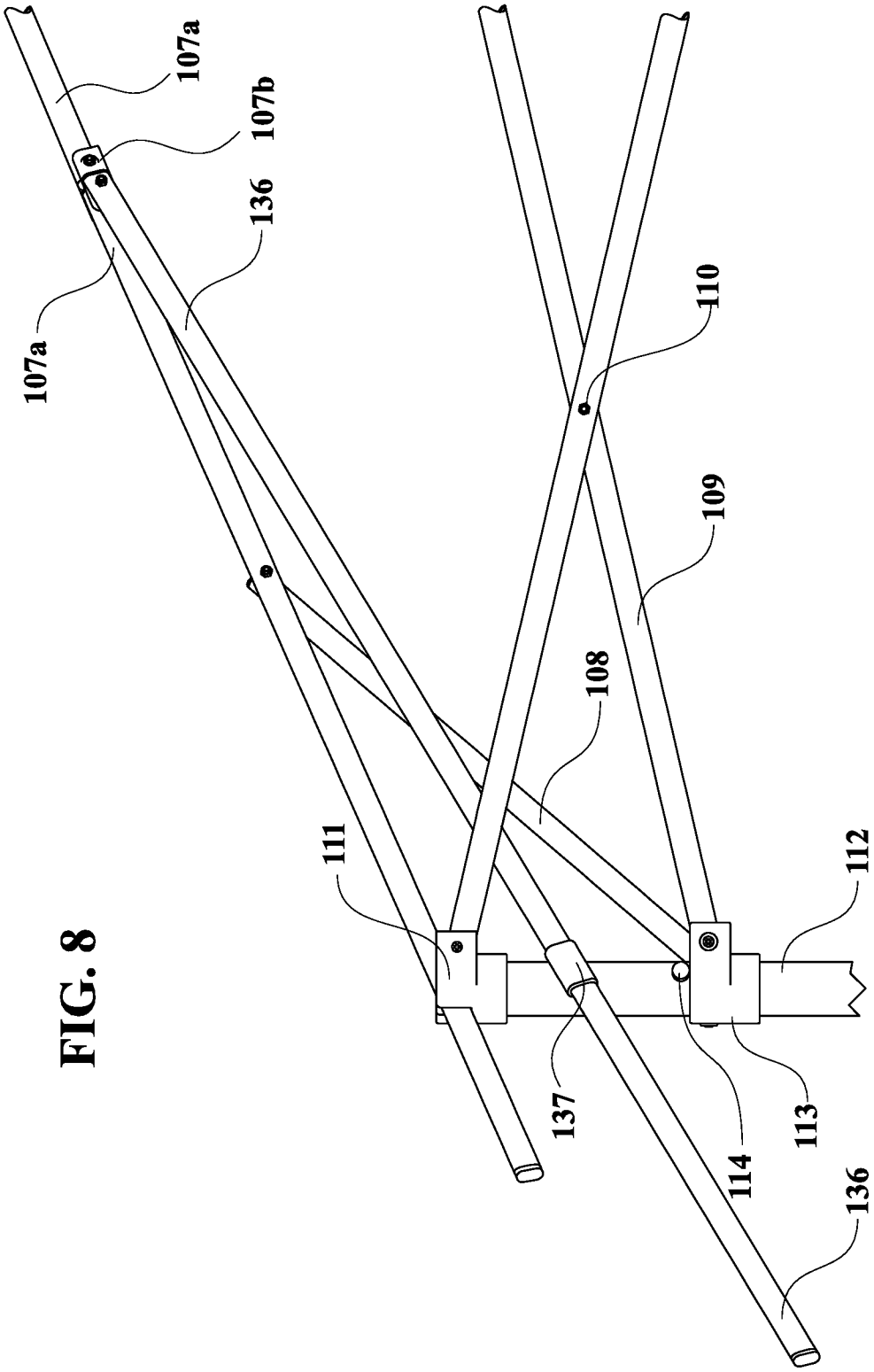


FIG. 8

FIG. 9

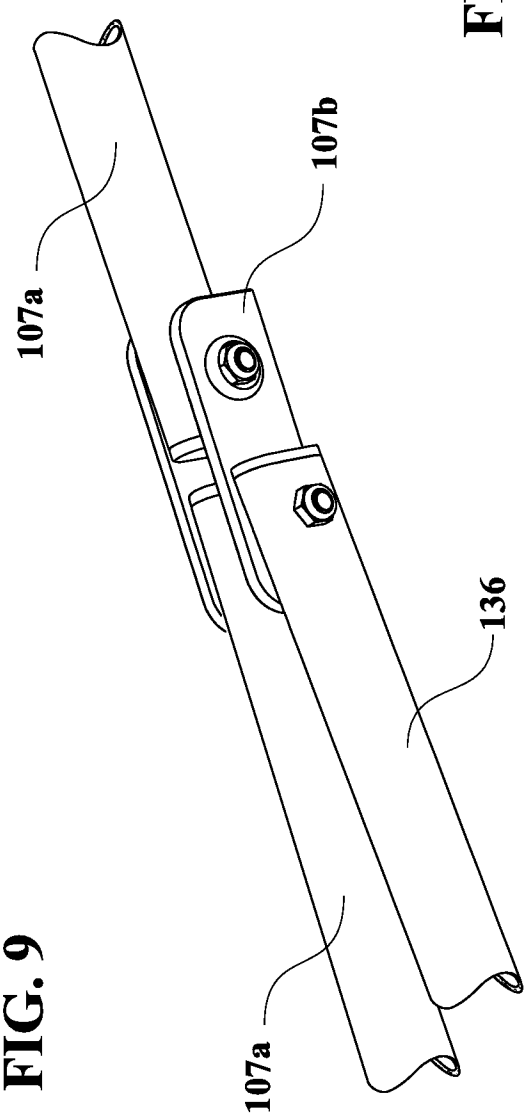


FIG. 10

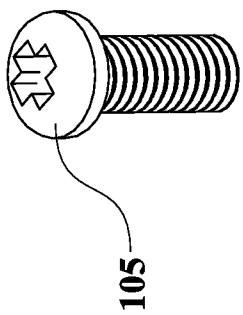


FIG. 11

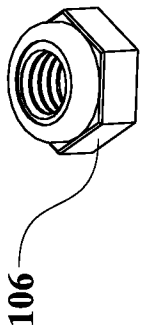


FIG. 12

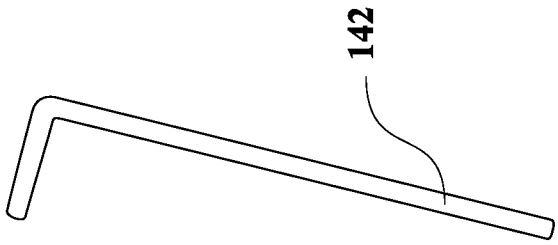


FIG. 13A

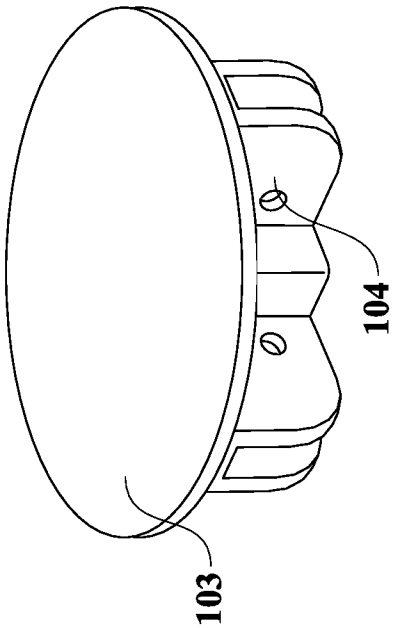


FIG. 13B

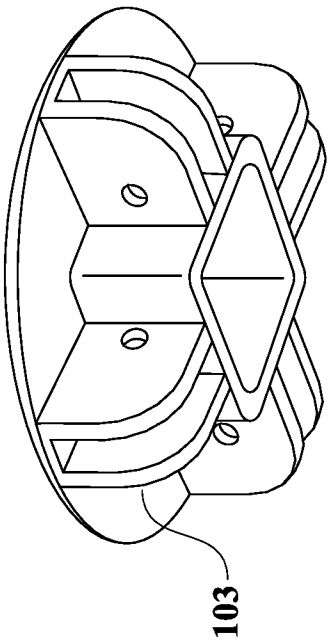
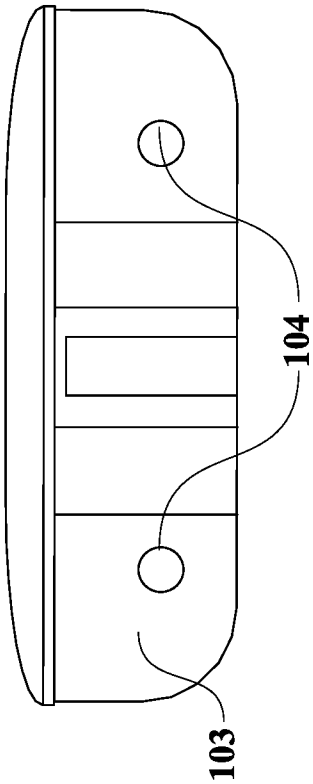


FIG. 13C



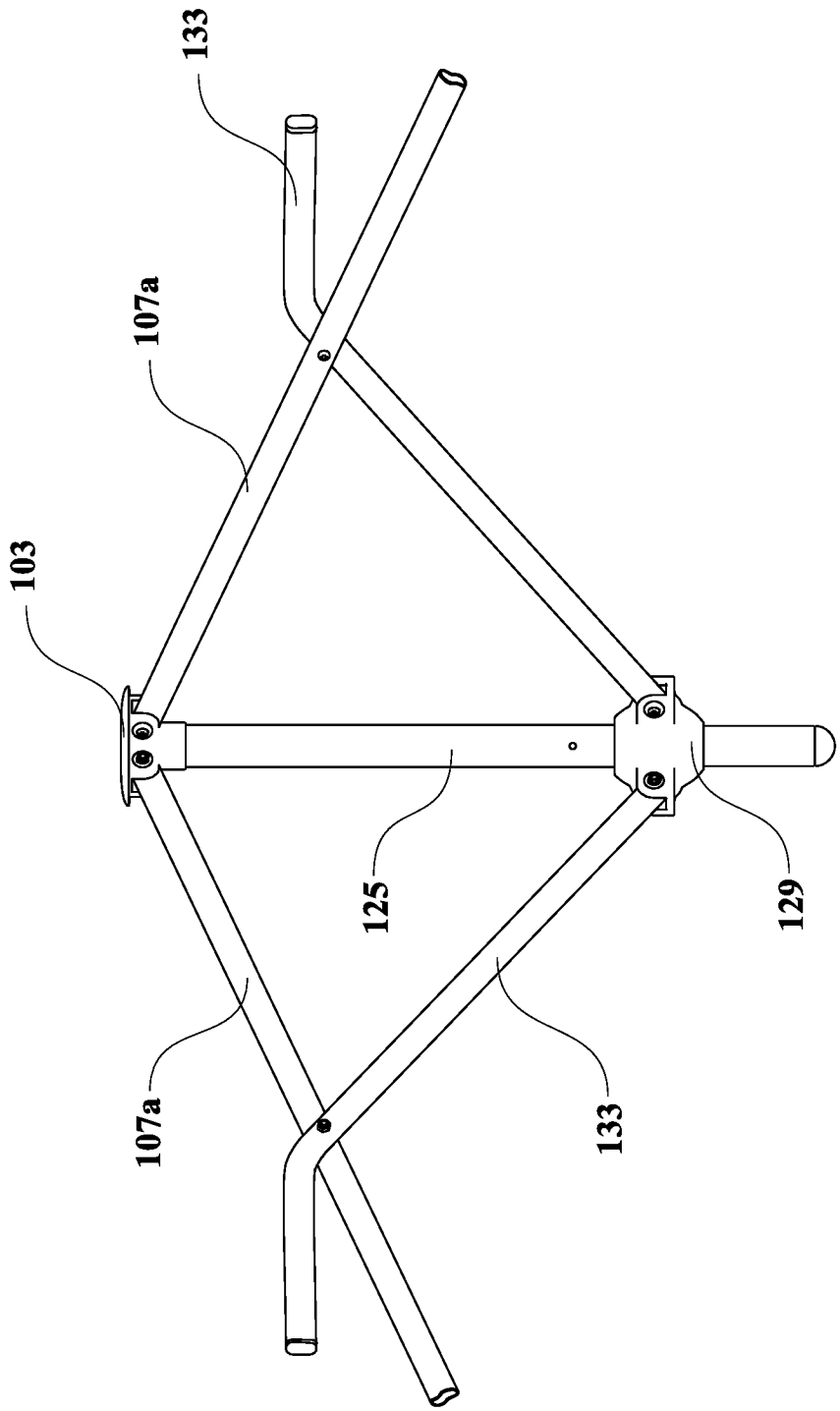


FIG. 14

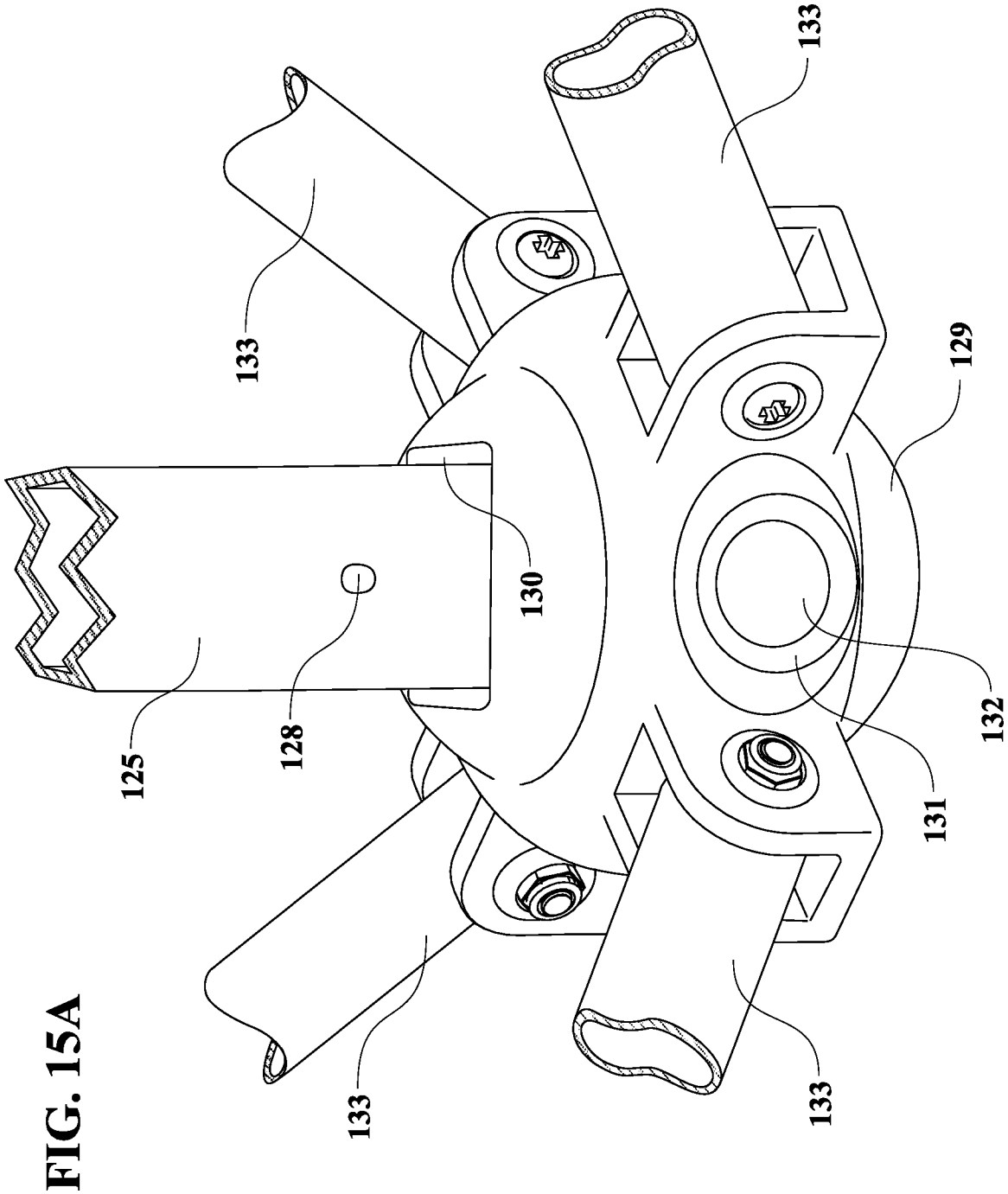


FIG. 15A

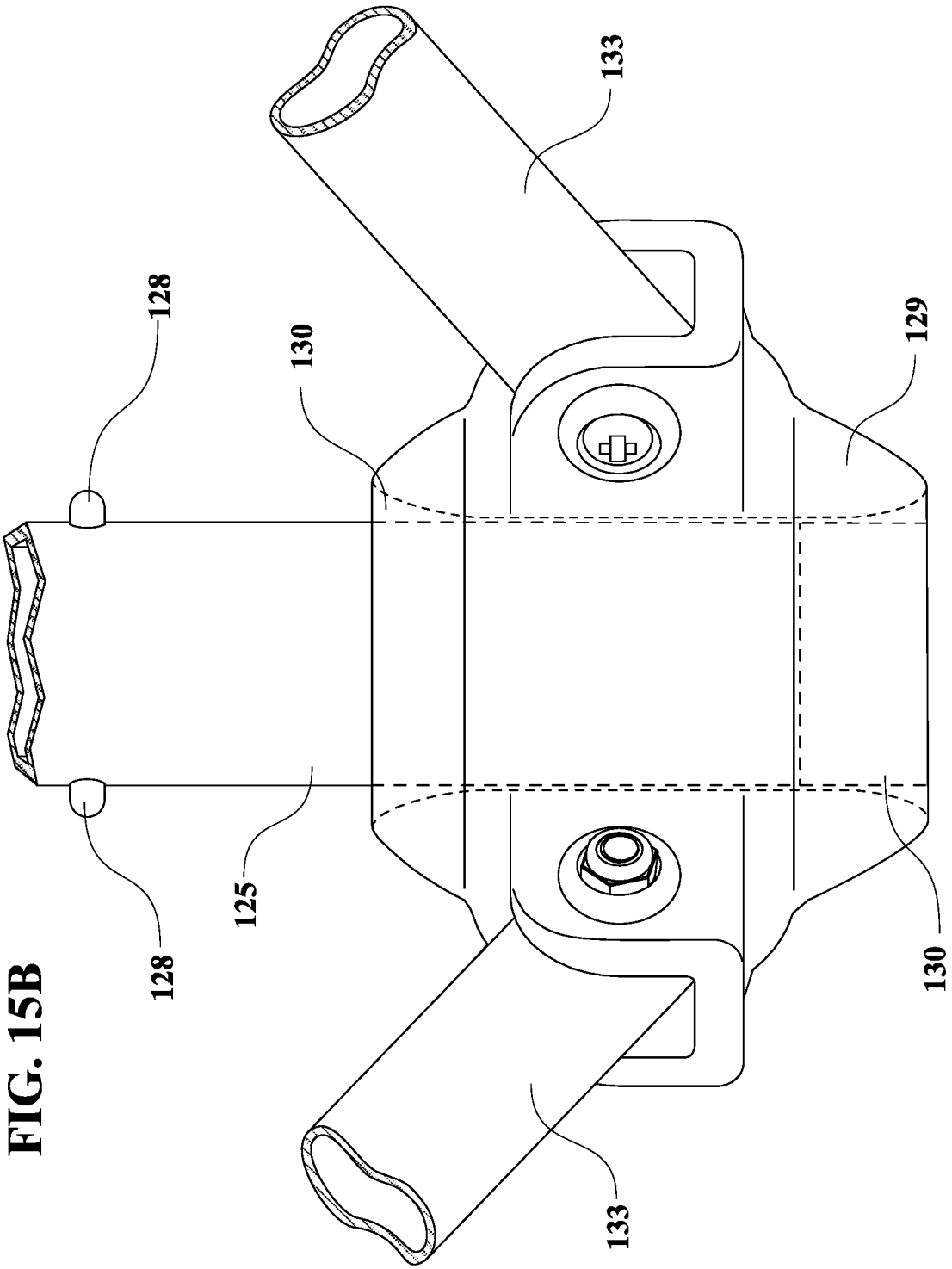


FIG. 15B

FIG. 16B

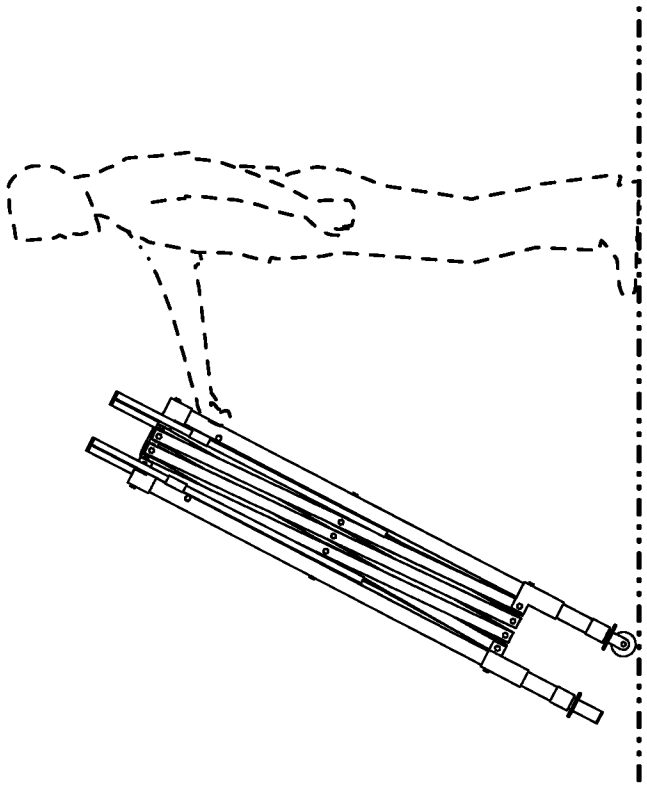
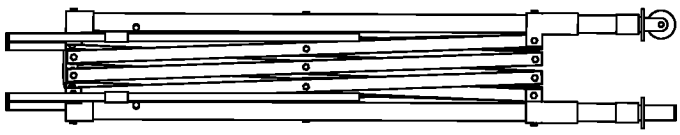


FIG. 16A



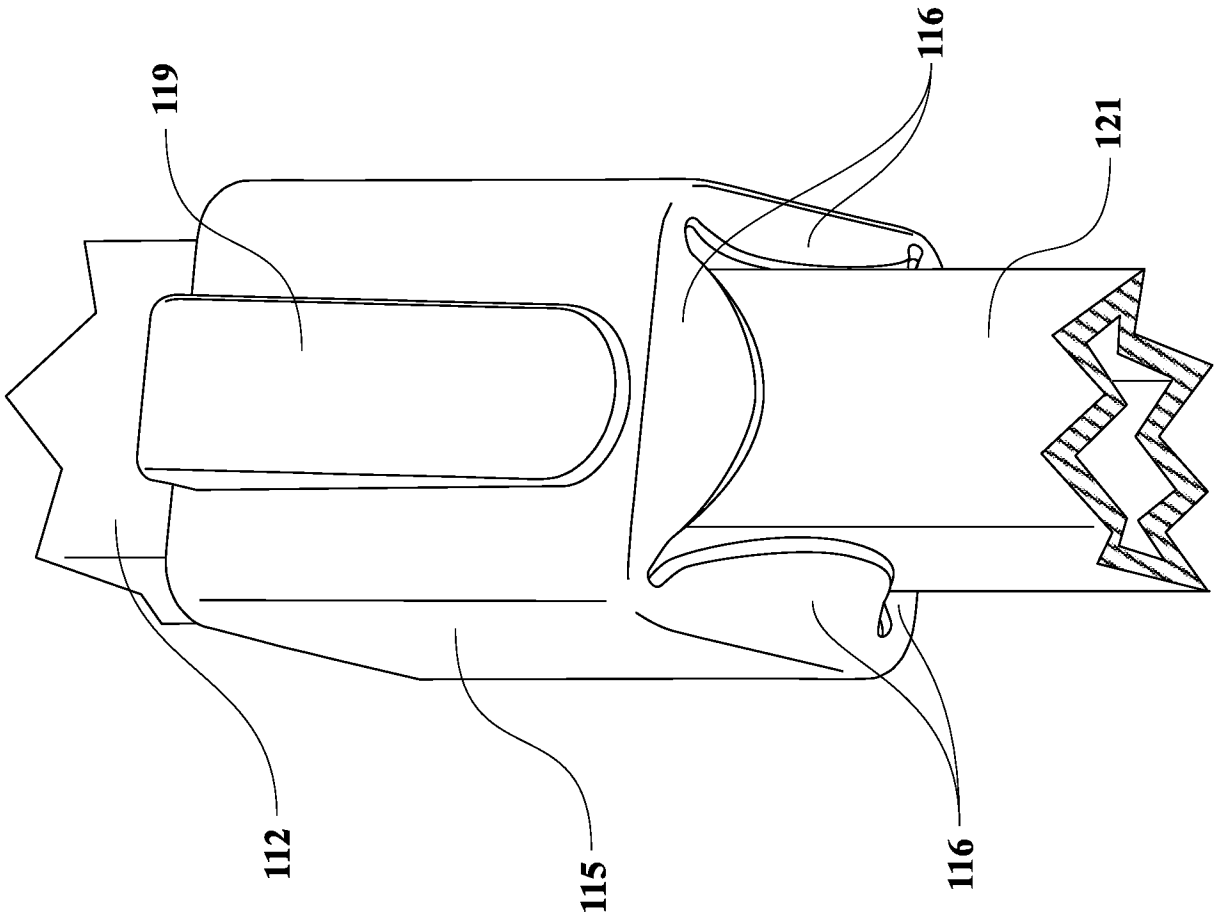


FIG. 17A

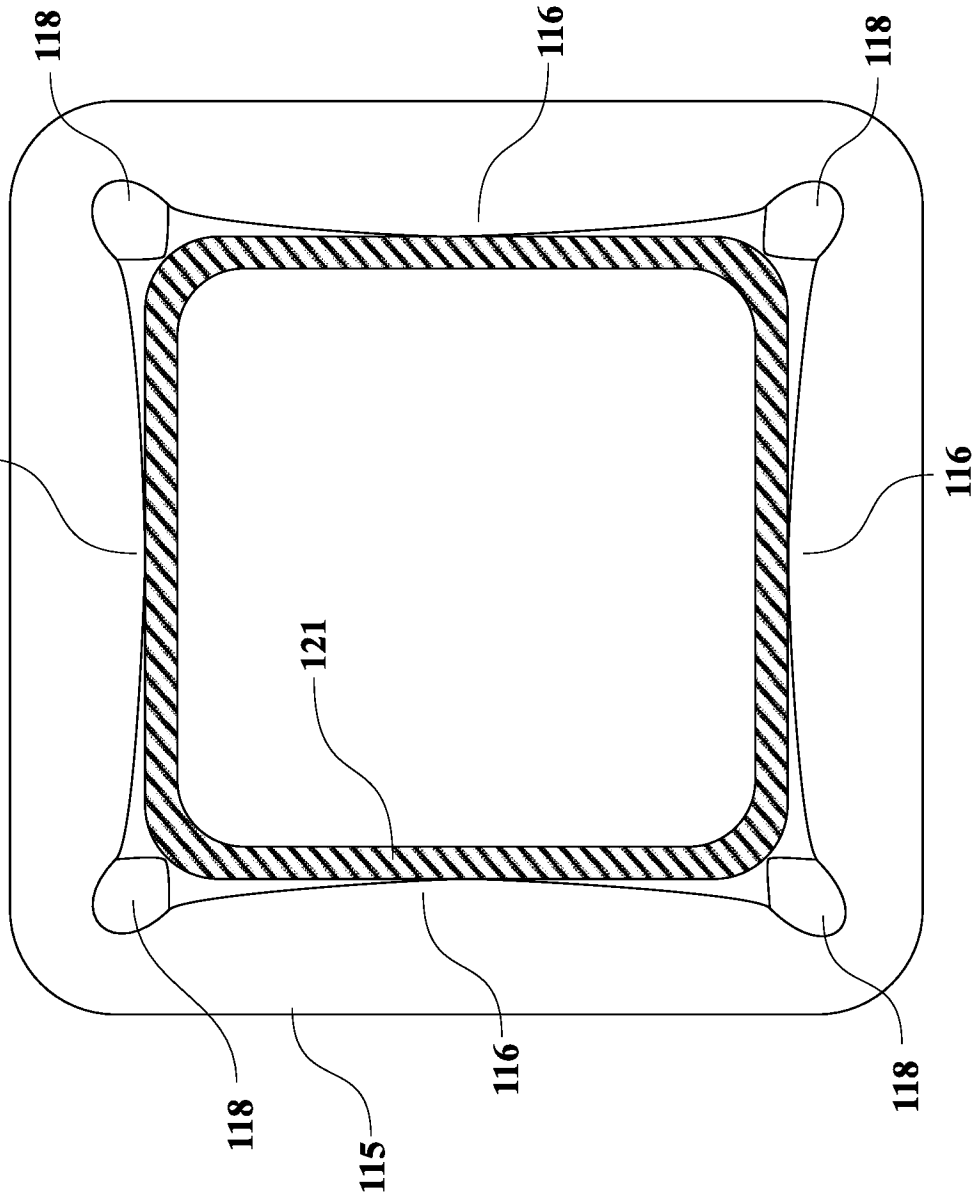


FIG. 17B

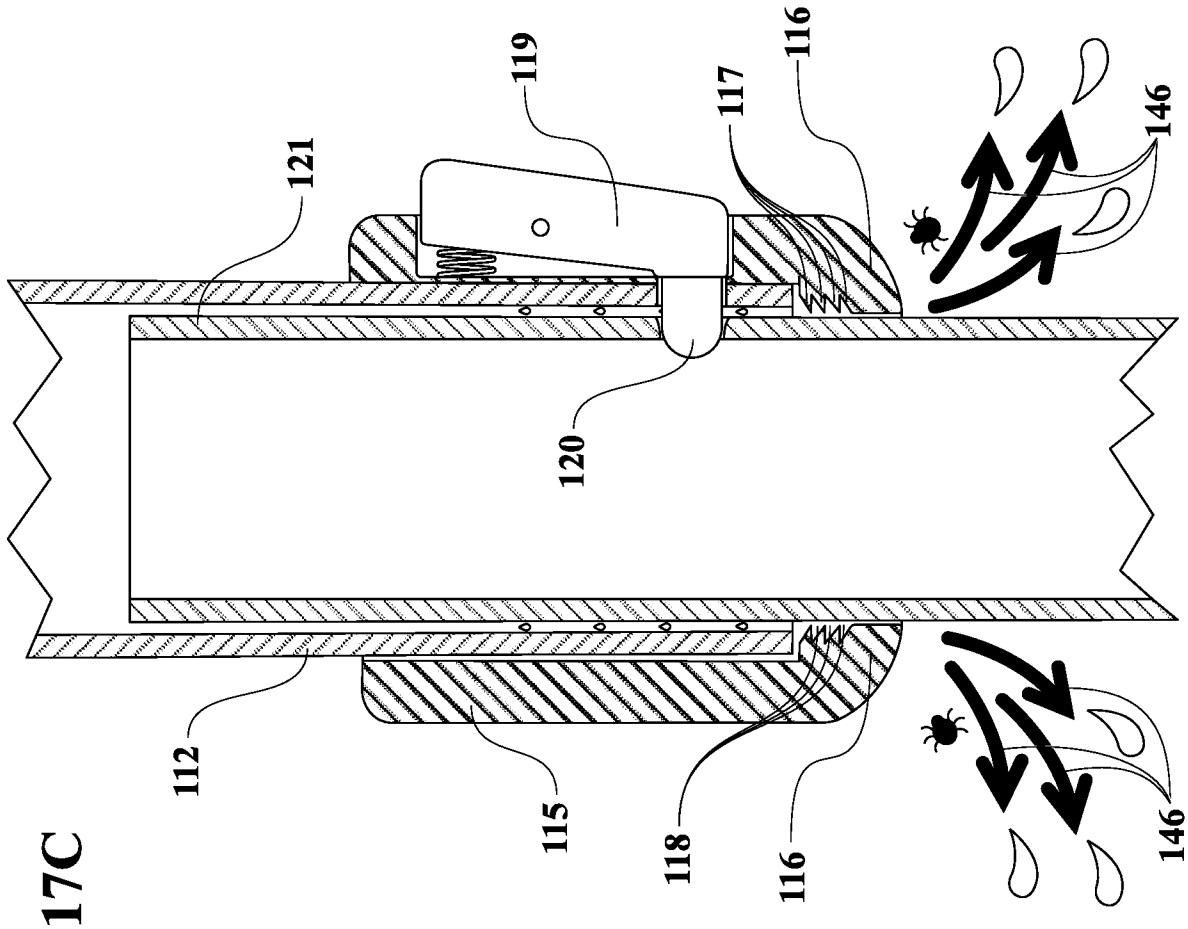
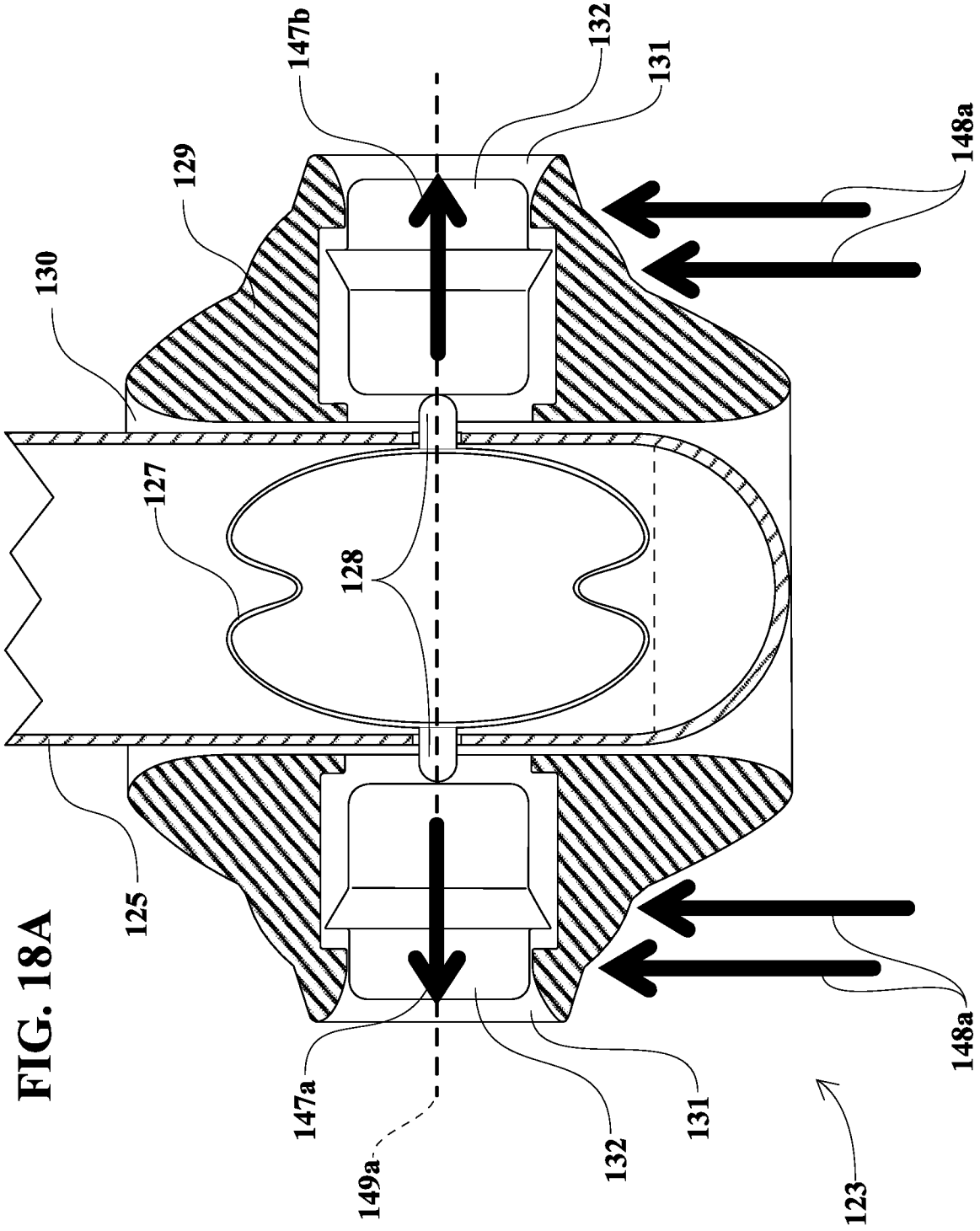


FIG. 17C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123
148a

FIG. 18A

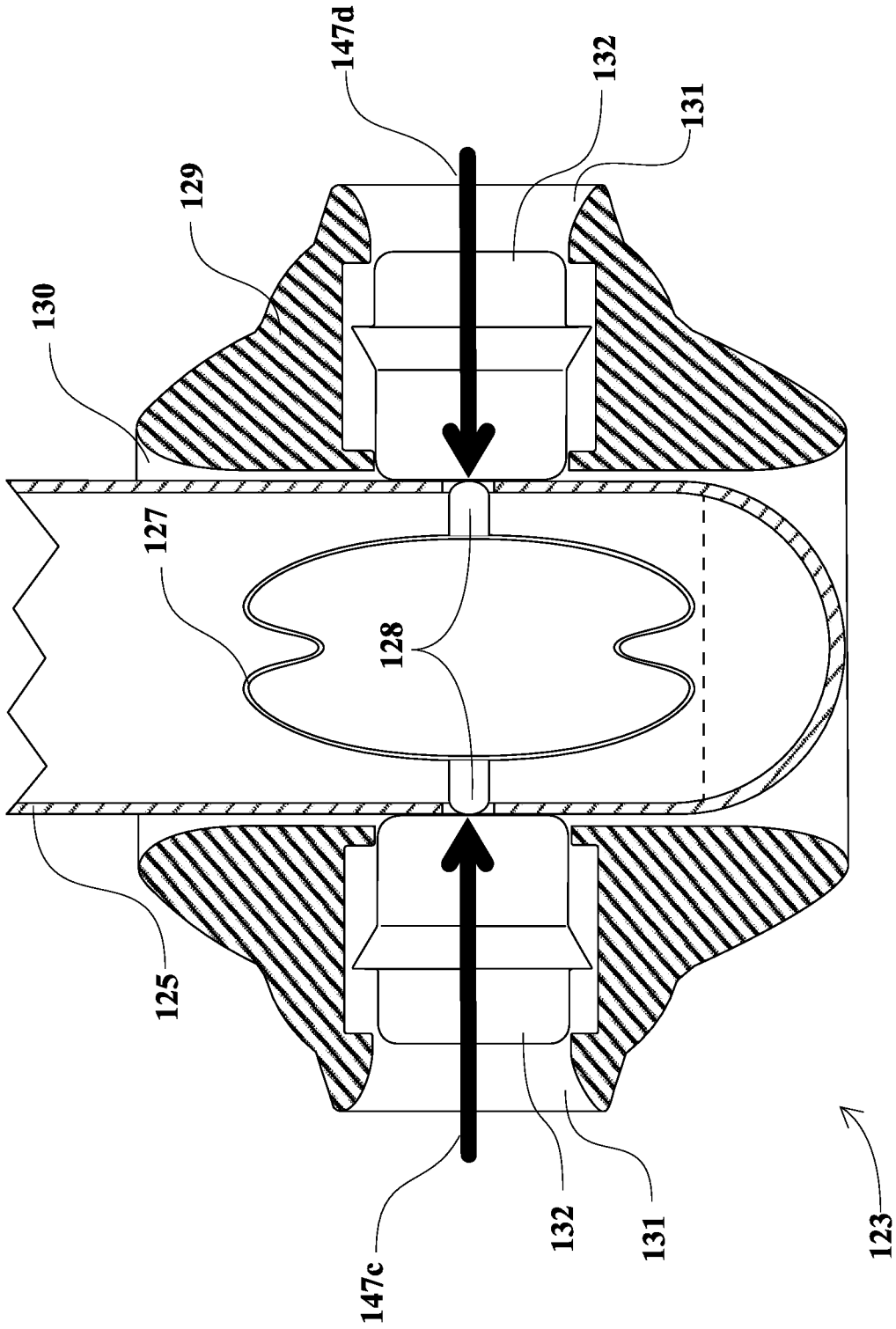


FIG. 18B

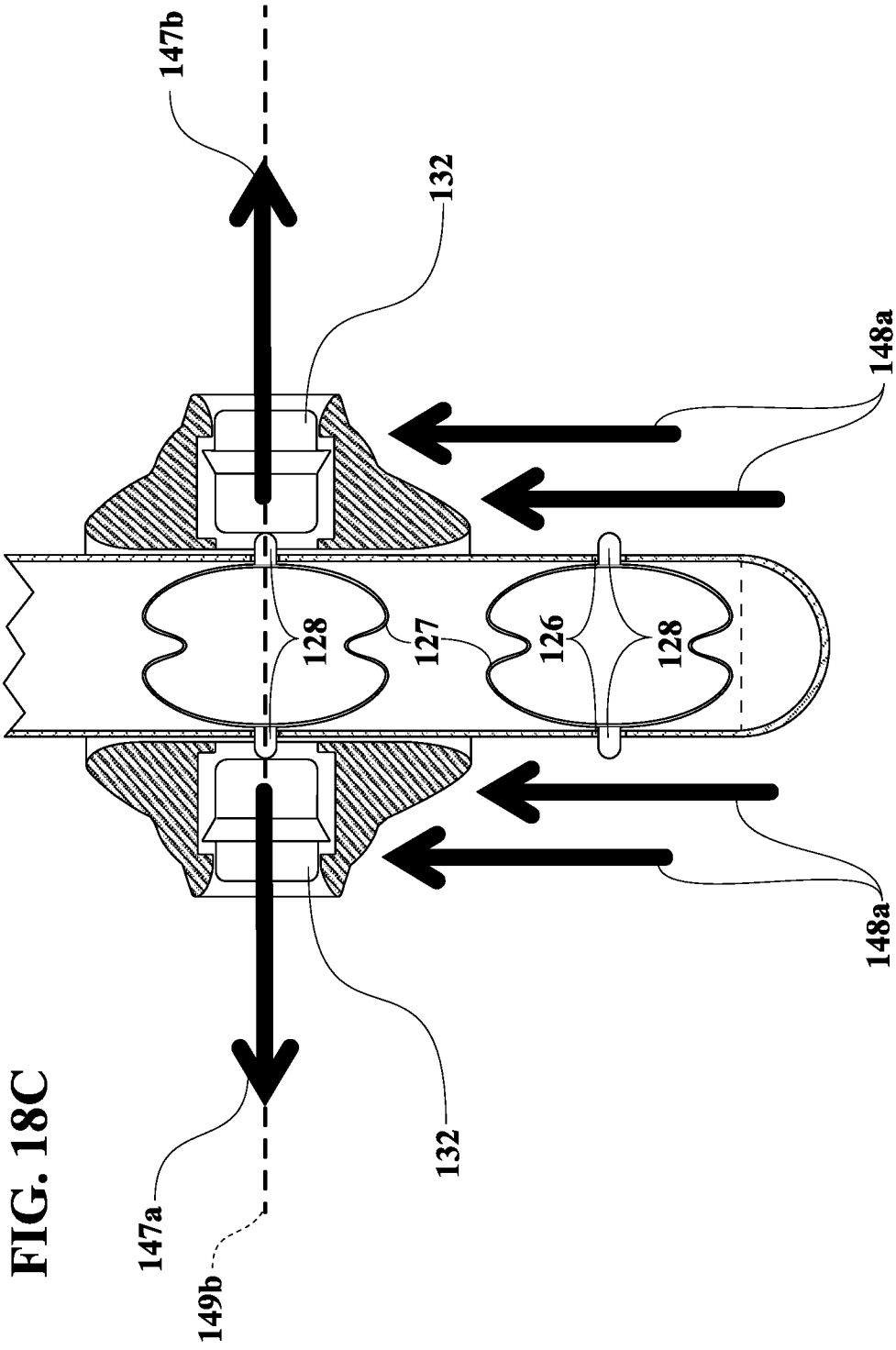


FIG. 18C

FIG. 19B

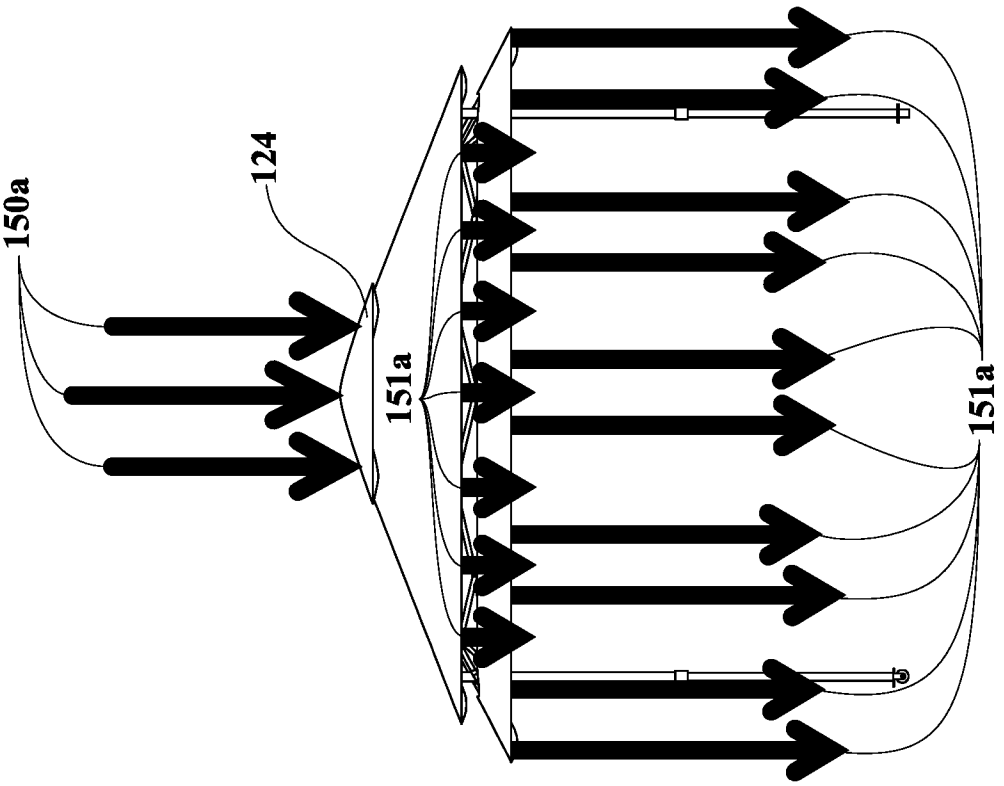


FIG. 19A

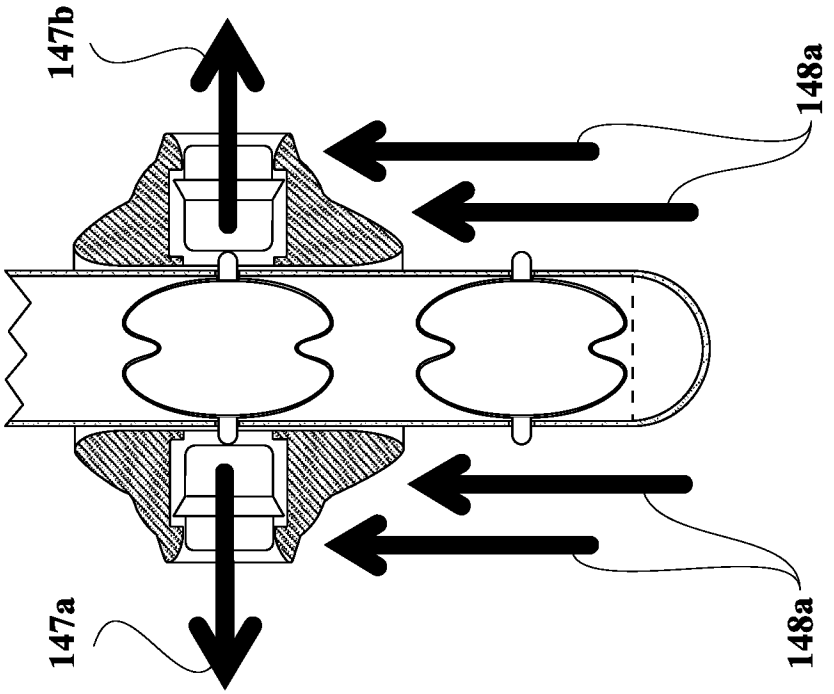


FIG. 19D

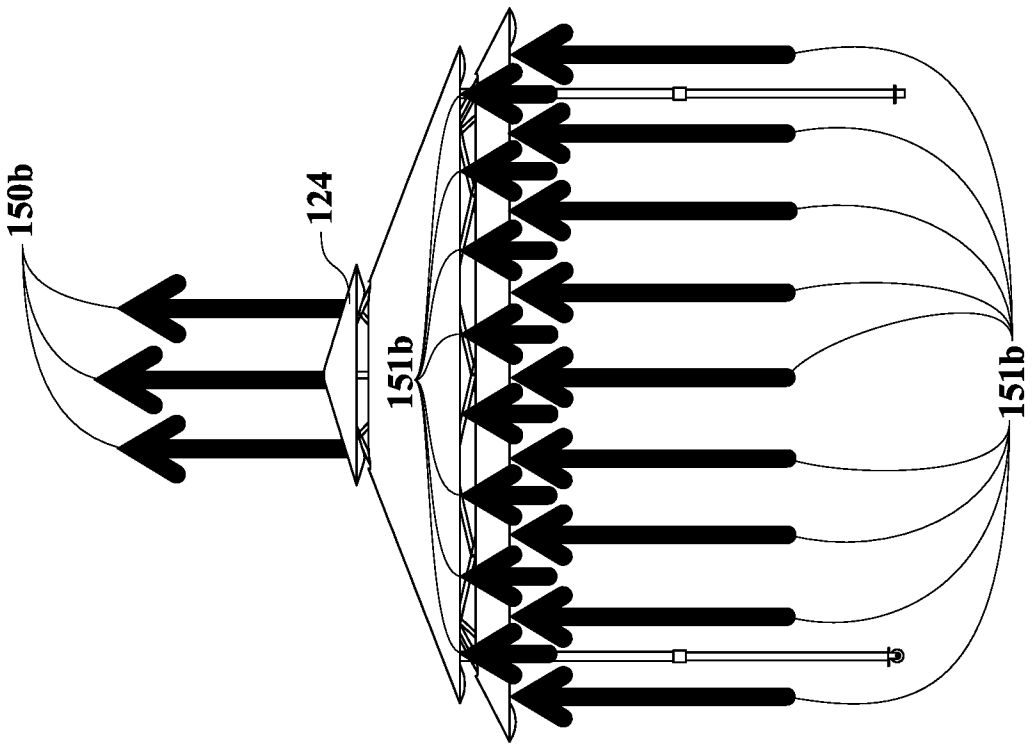
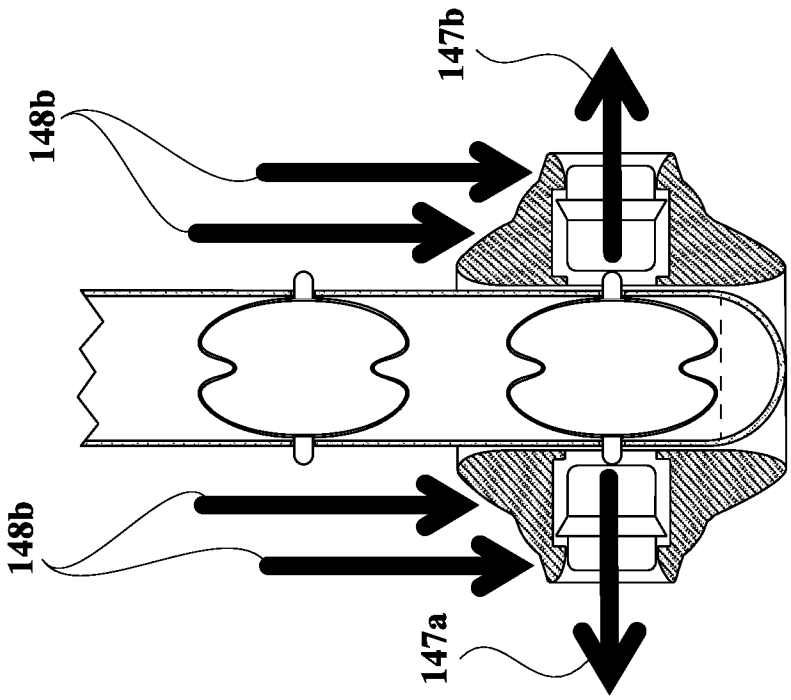


FIG. 19C



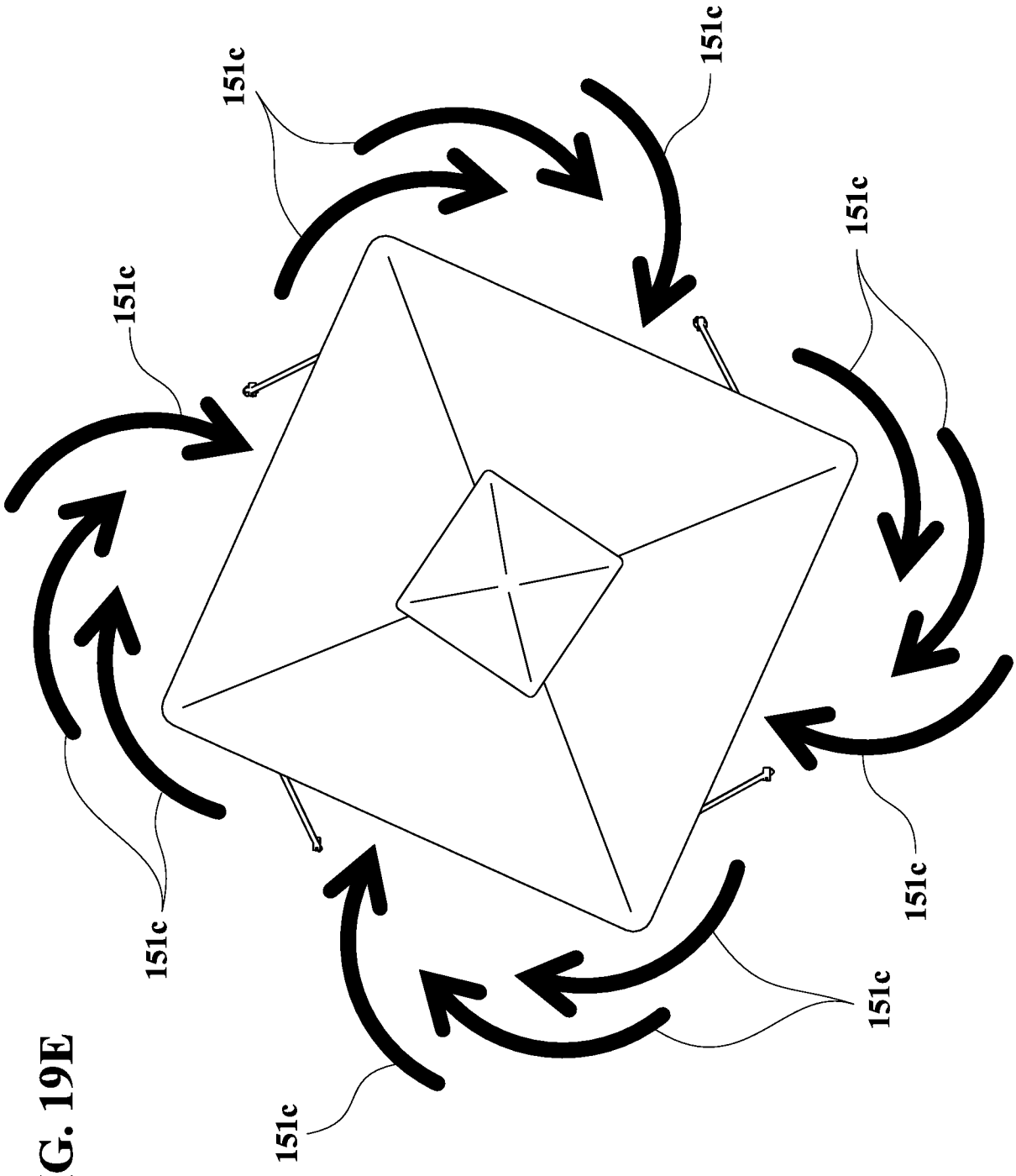


FIG. 19E

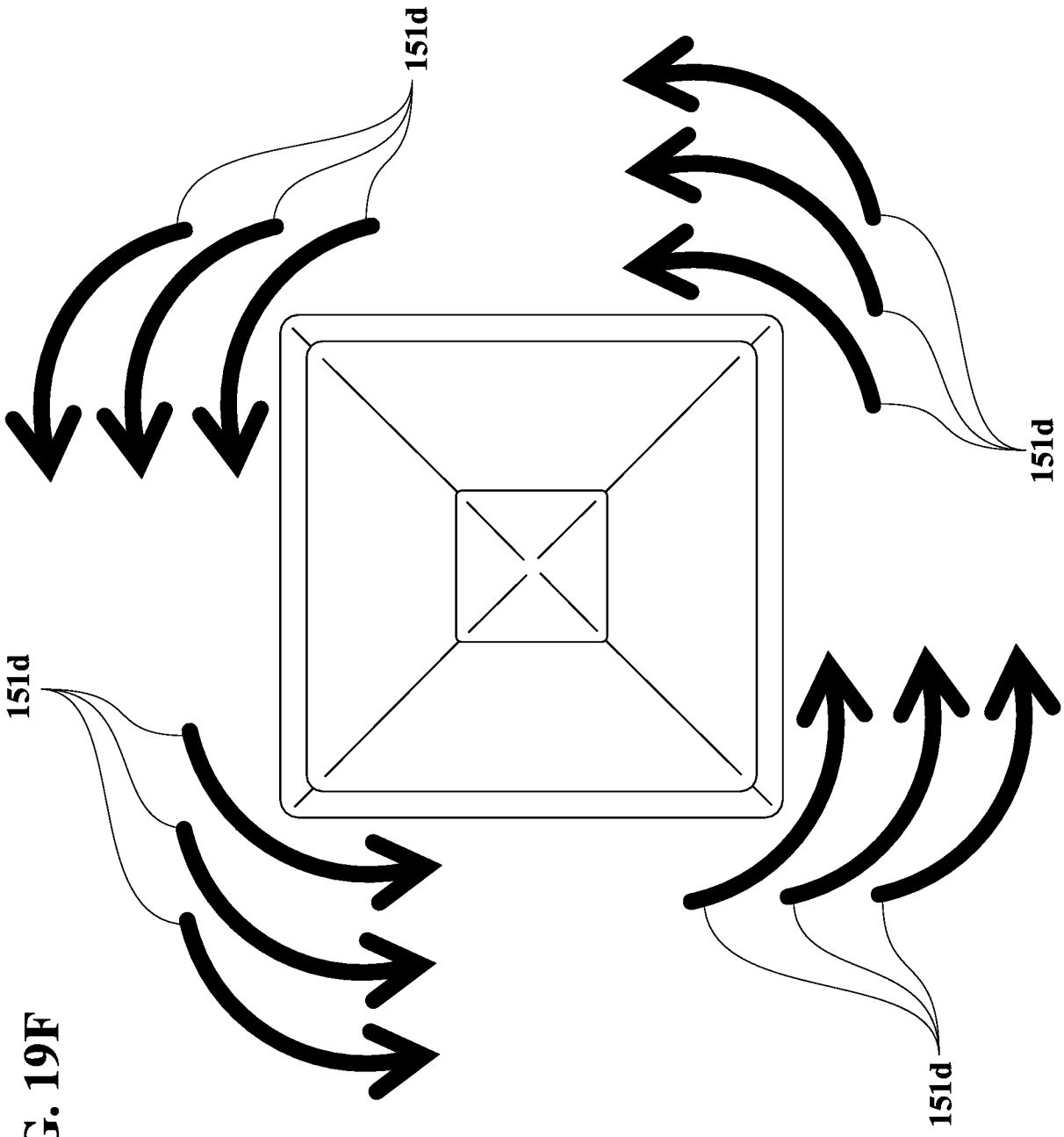


FIG. 19F

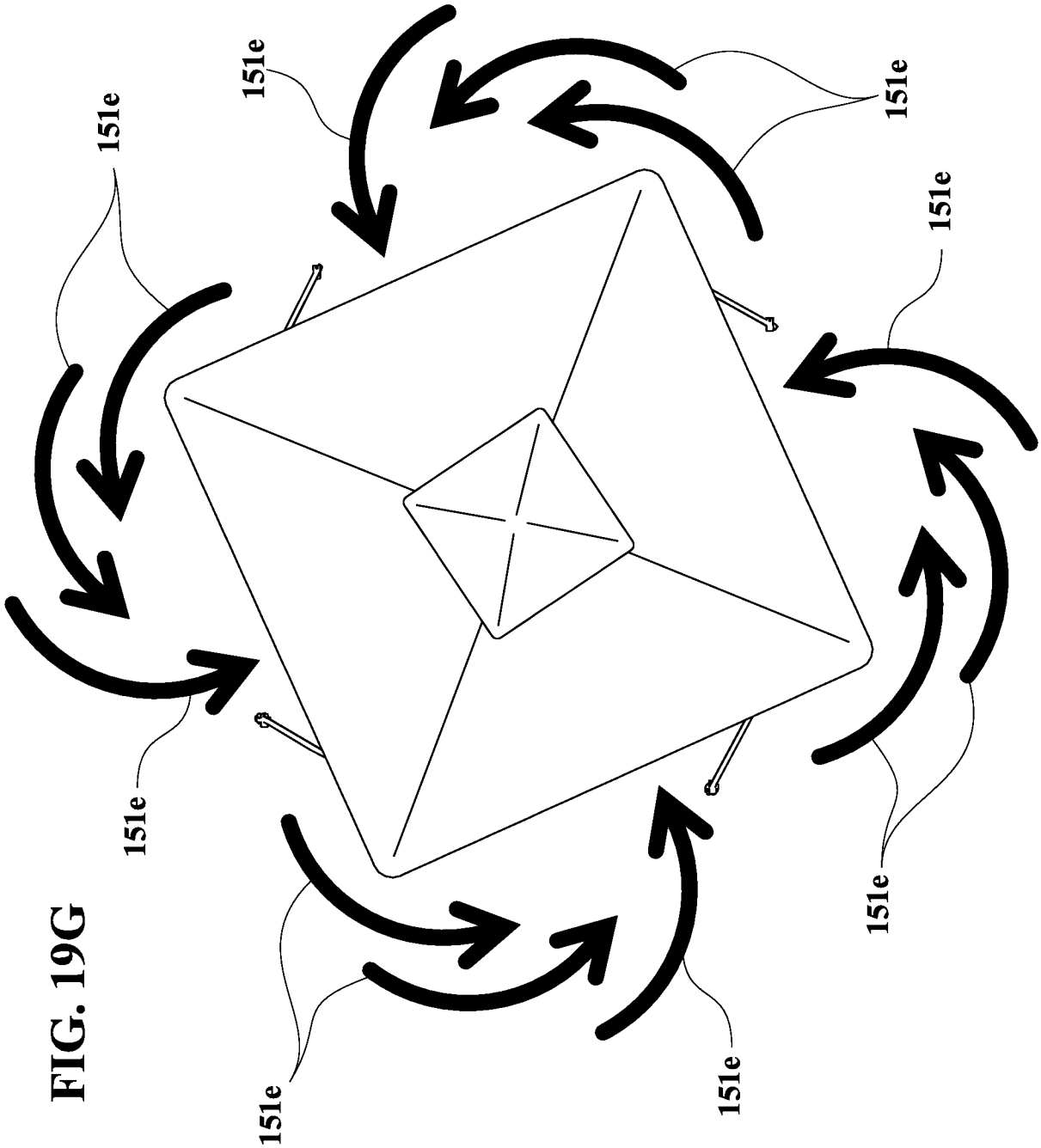


FIG. 19G

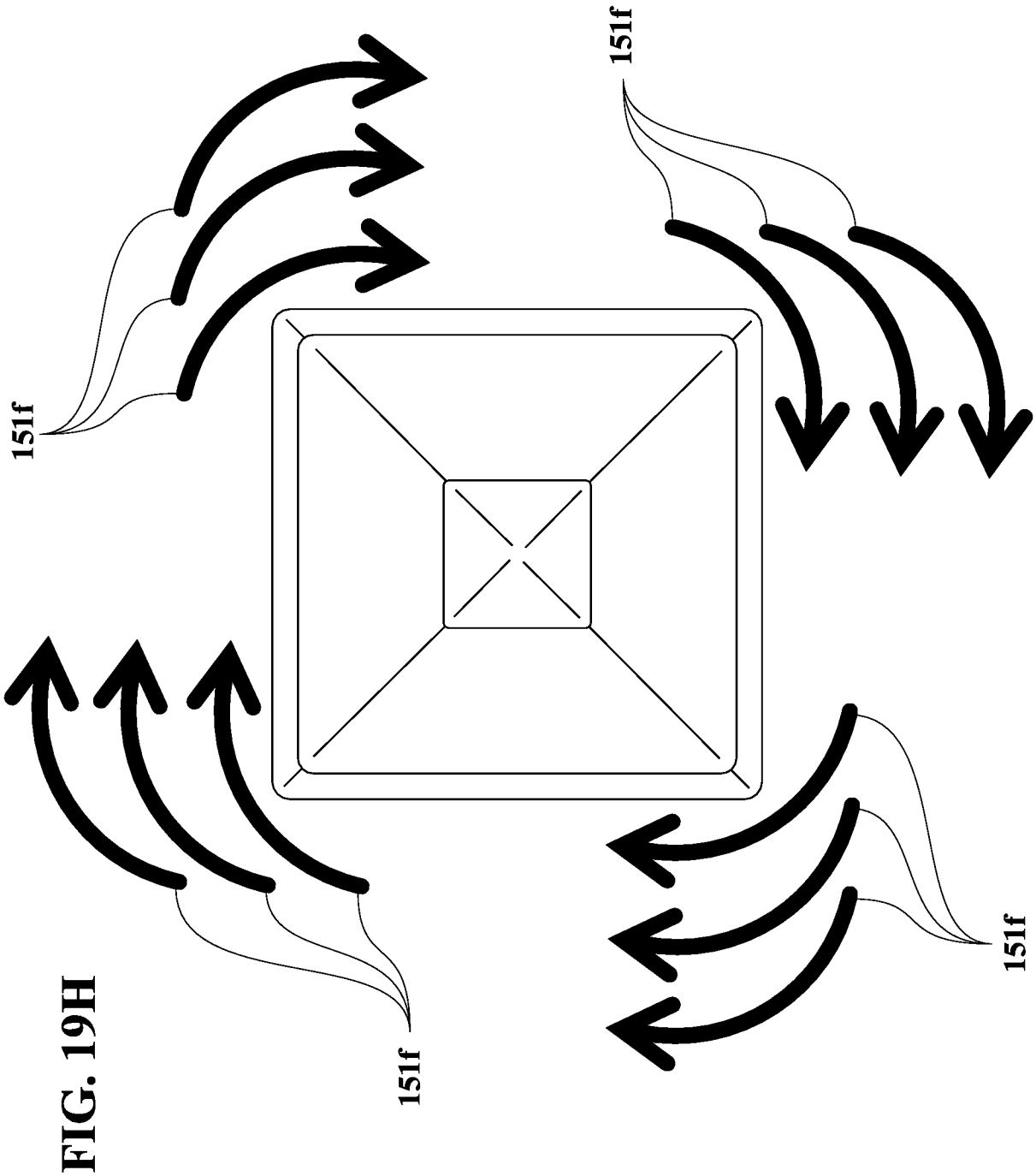


FIG. 19H

FIG. 20A

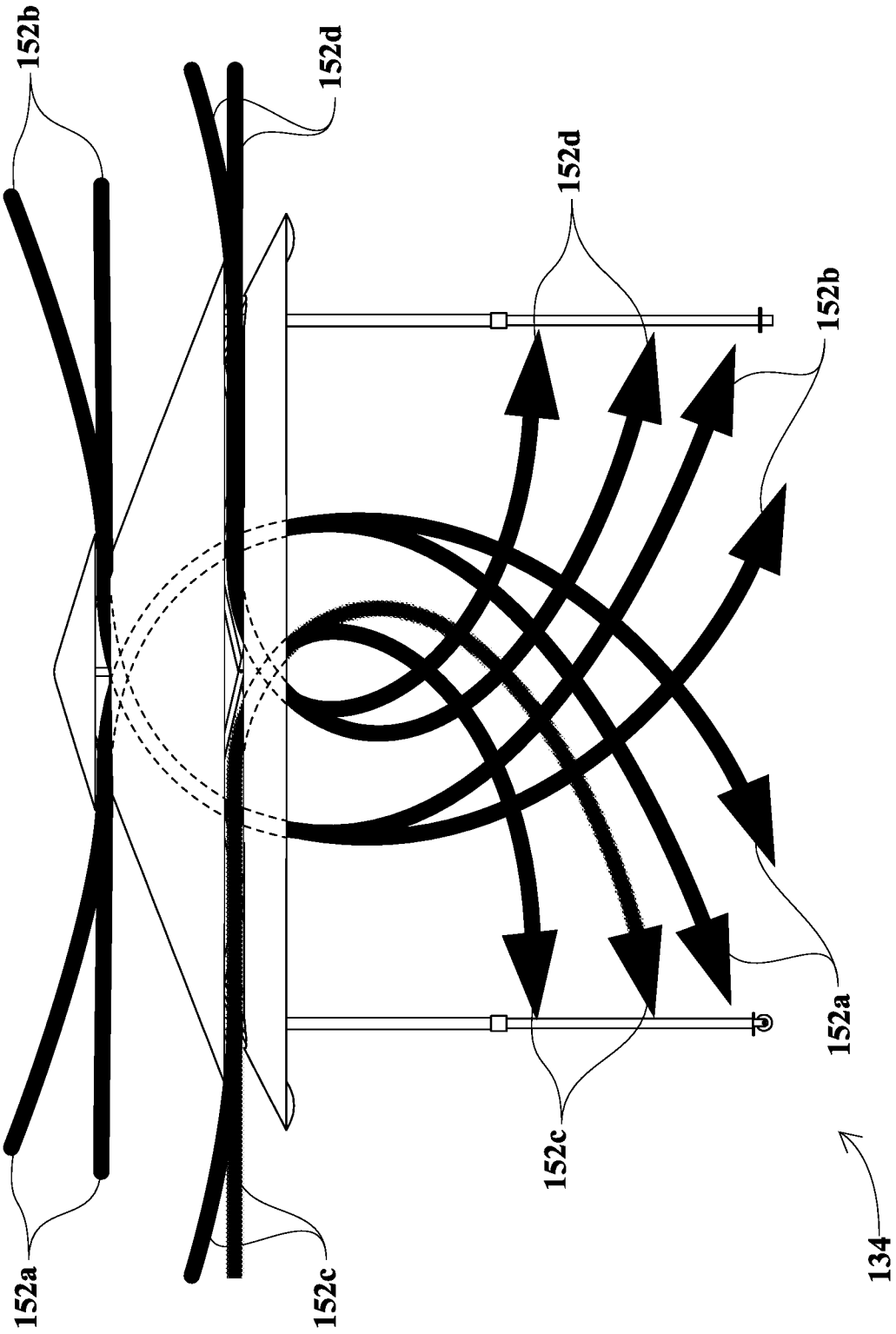


FIG. 20B

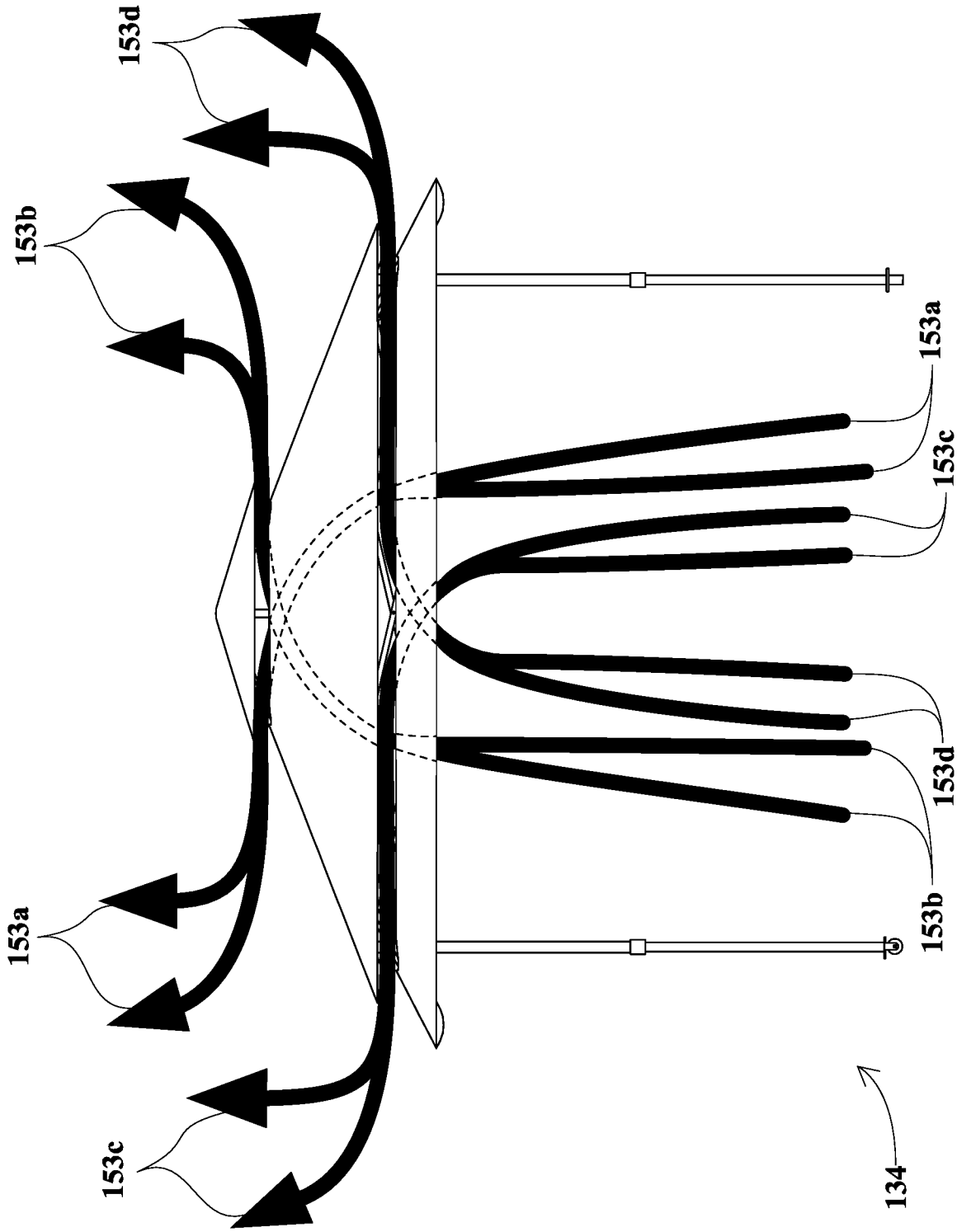
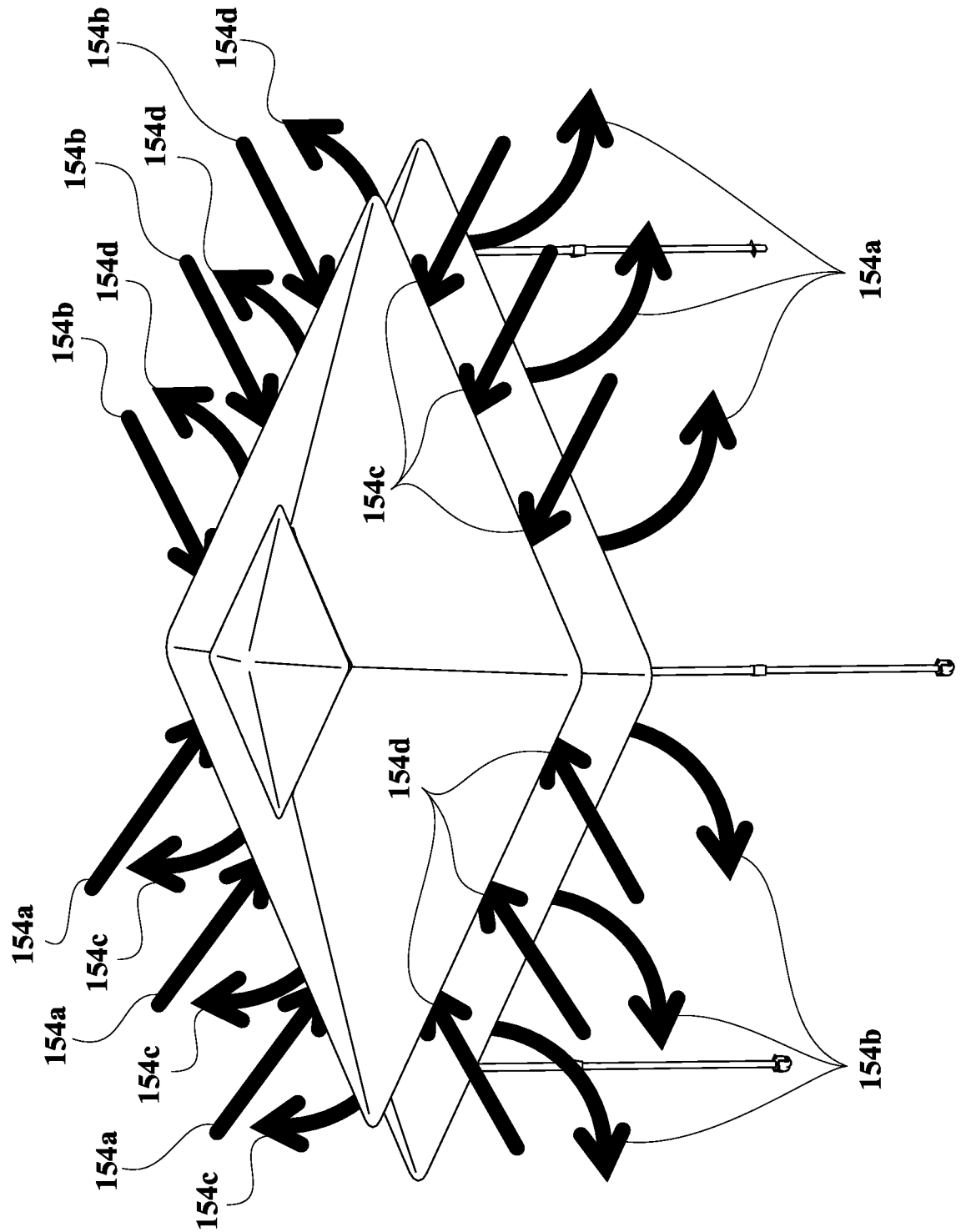


FIG. 20C


154a
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154c
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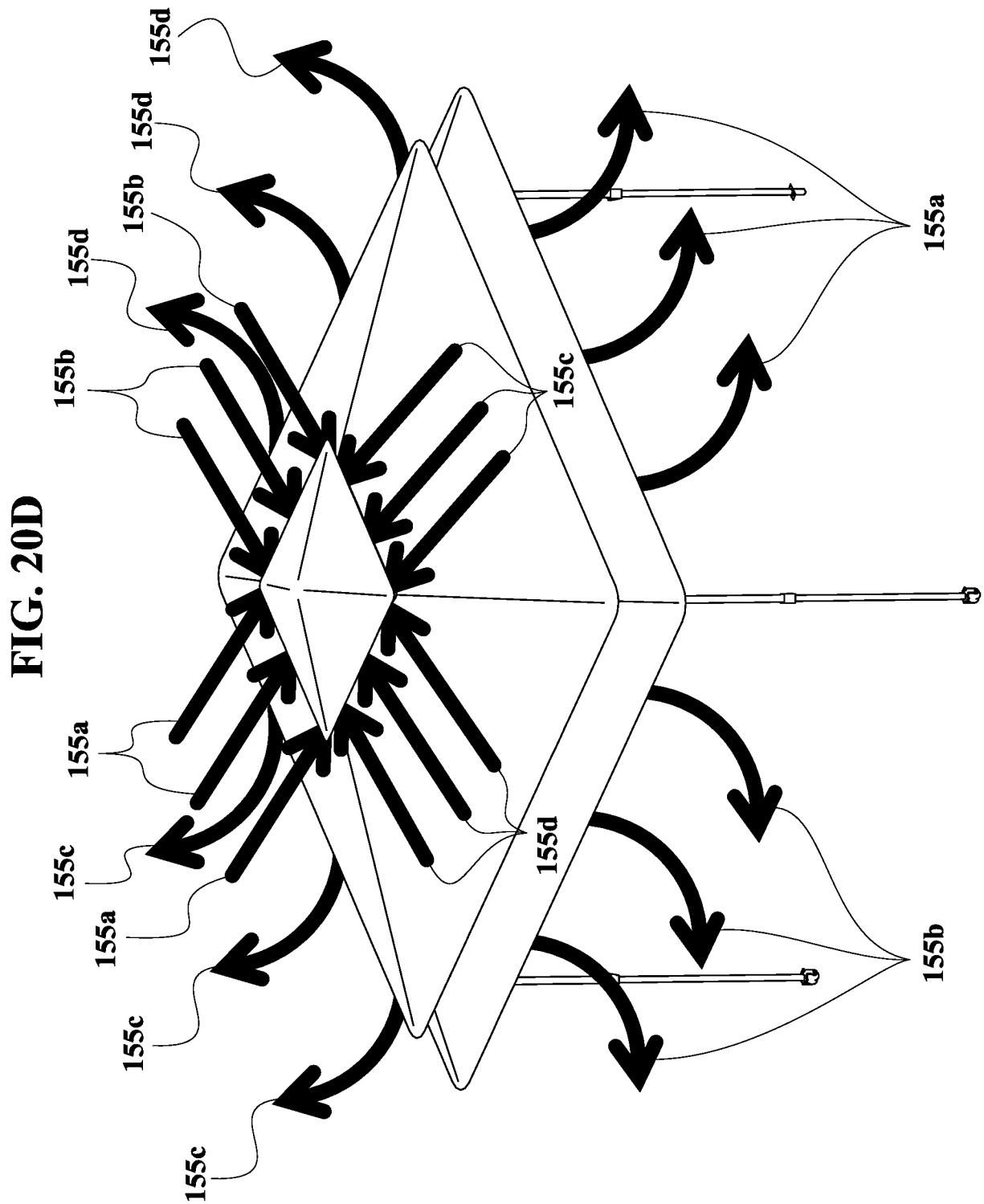
154c
154b
154d
154b
154d
154b
154d
154c
154d
154a
154b

FIG. 20D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155d
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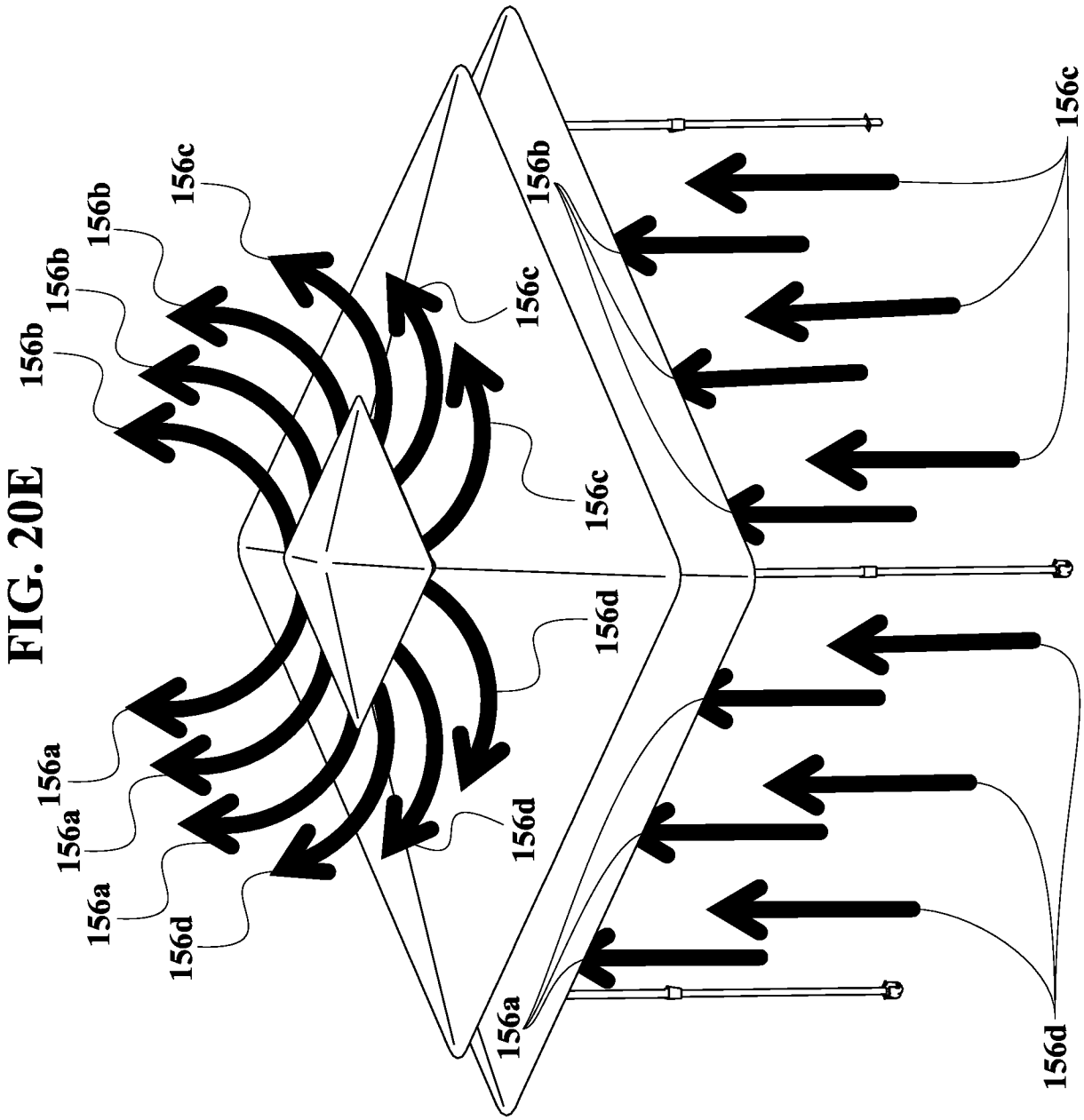
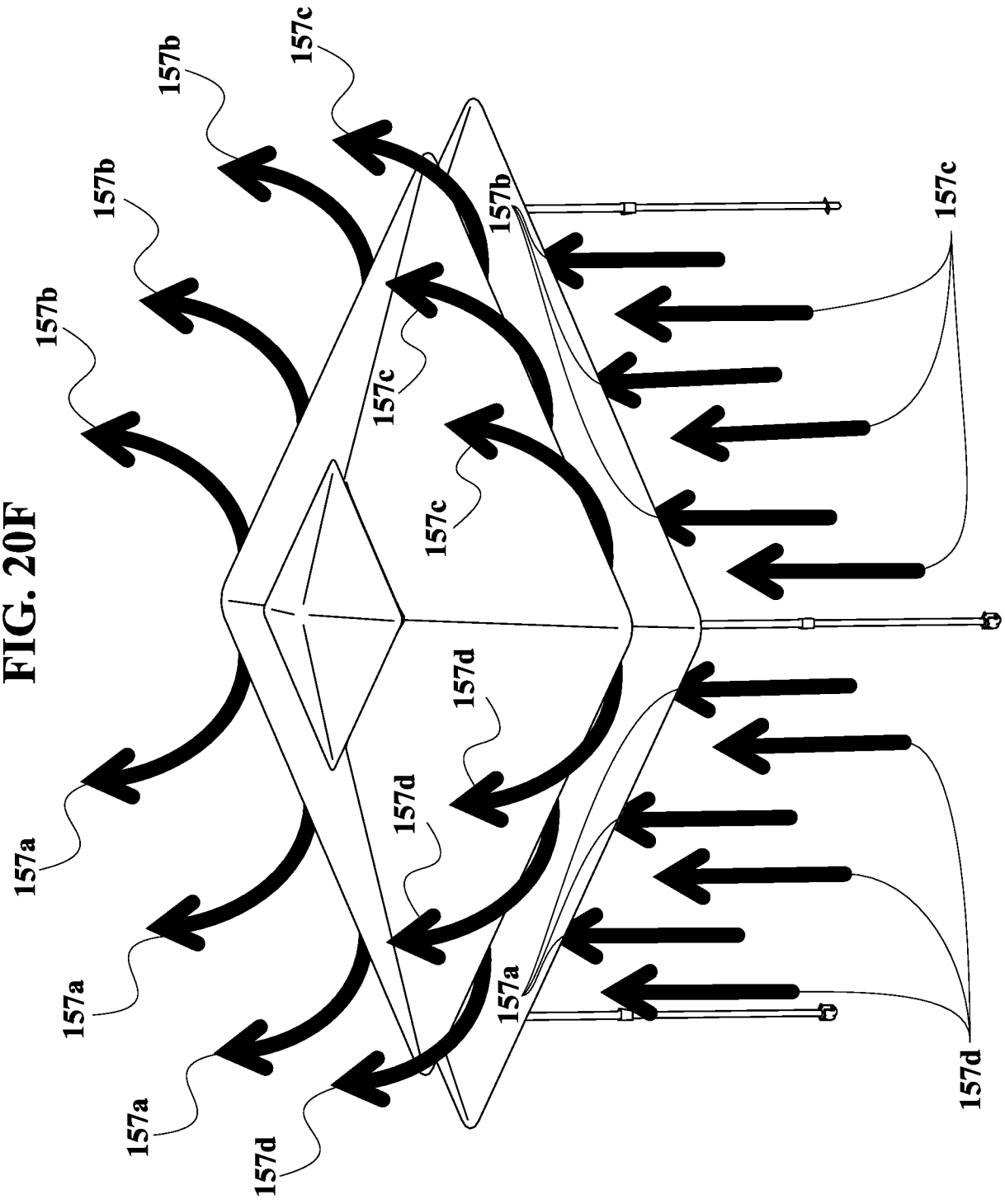
155a
155c
155d
155a
155c
155a
155c
155b
155c

FIG. 20E

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157c
157d

FIG. 20F

FIG. 20G

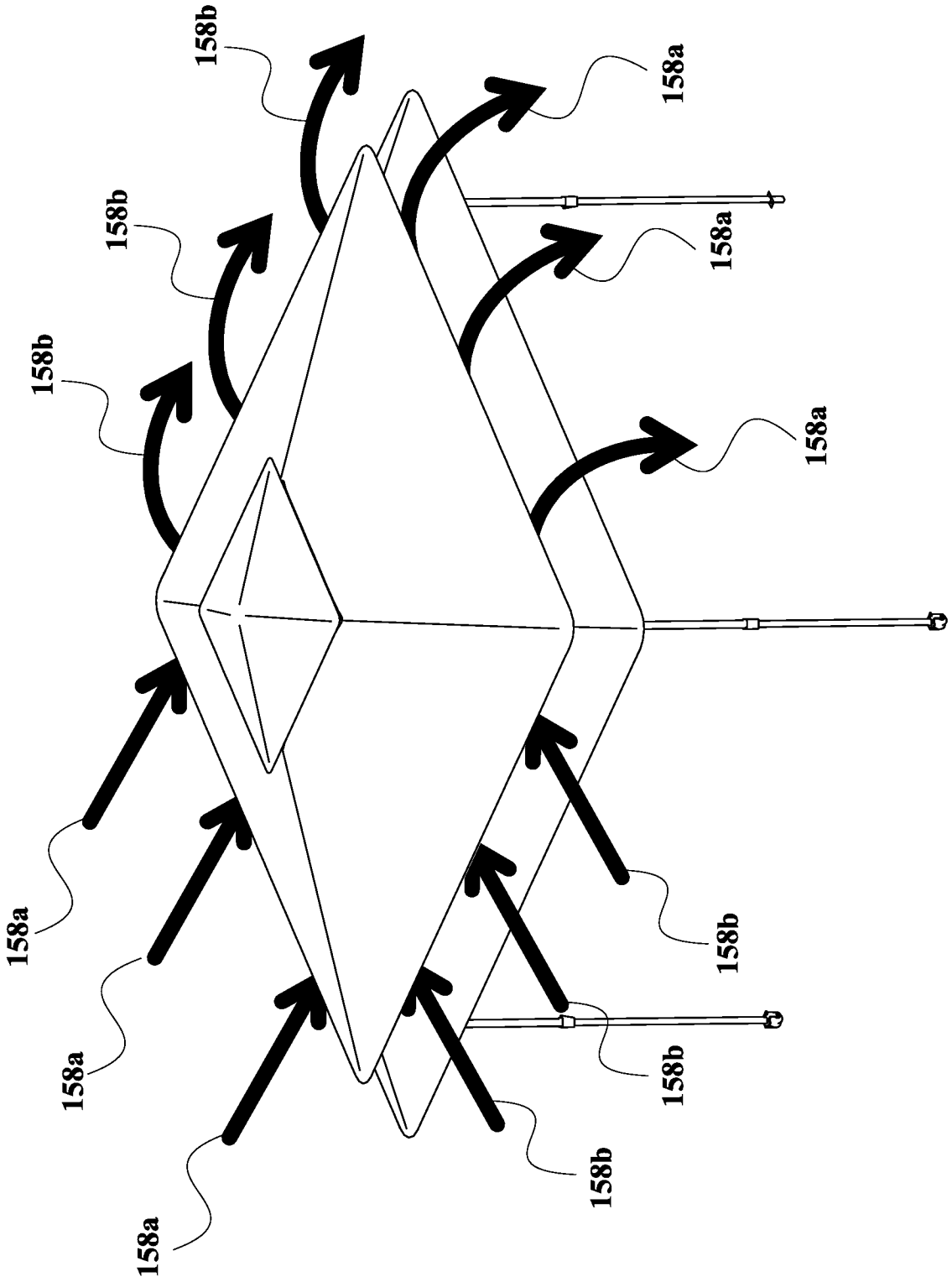


FIG. 20H

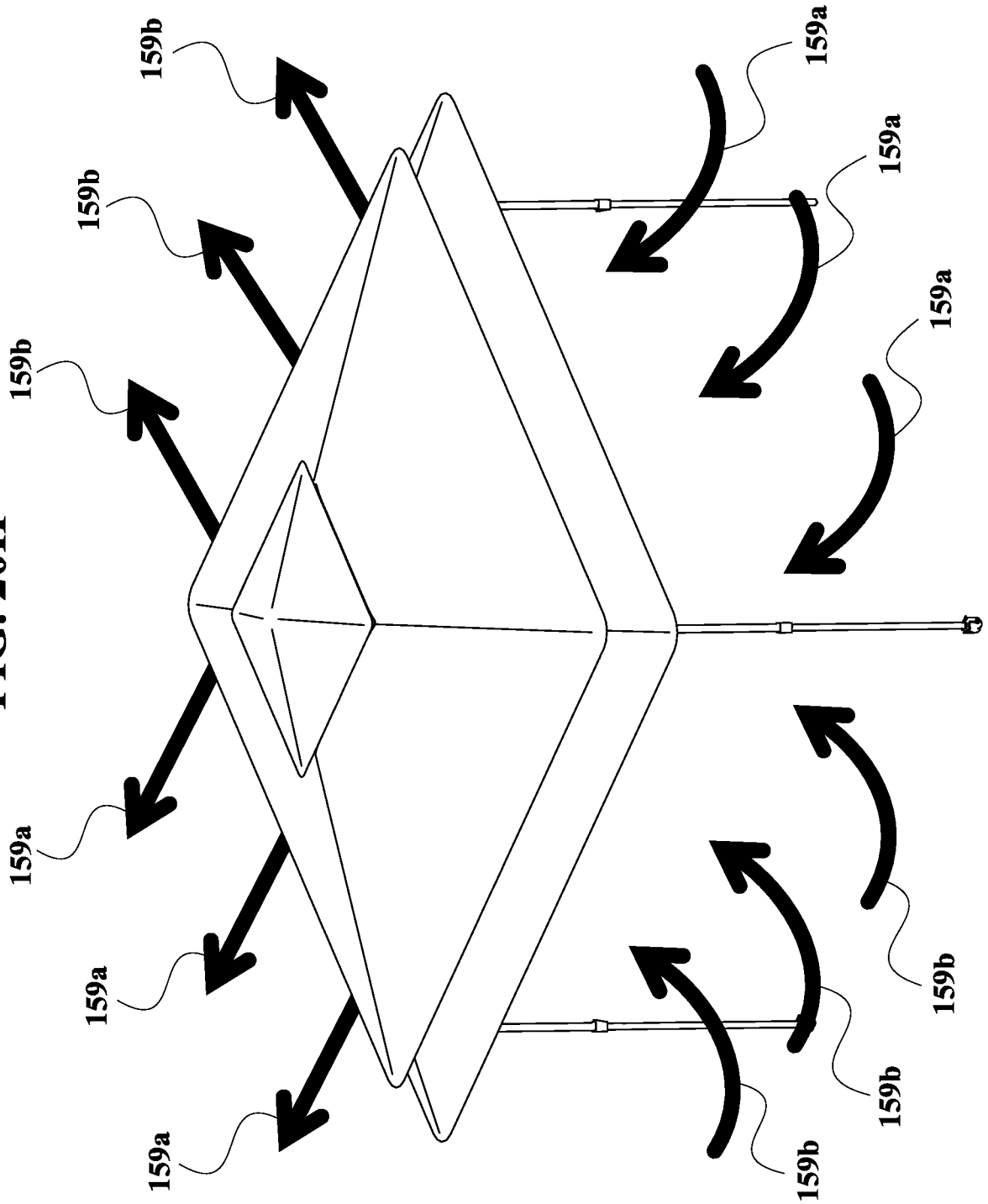


FIG. 21B

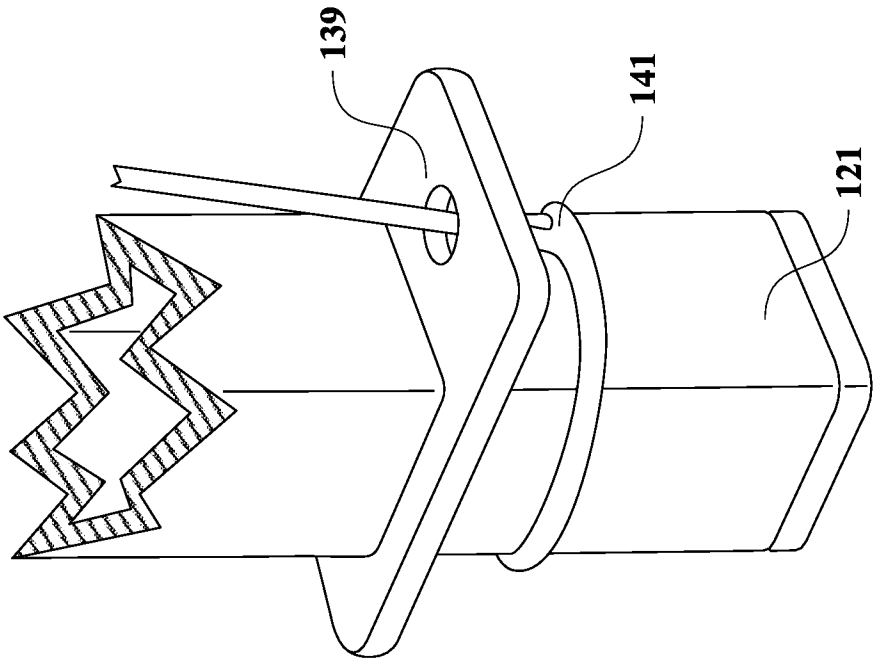


FIG. 21A

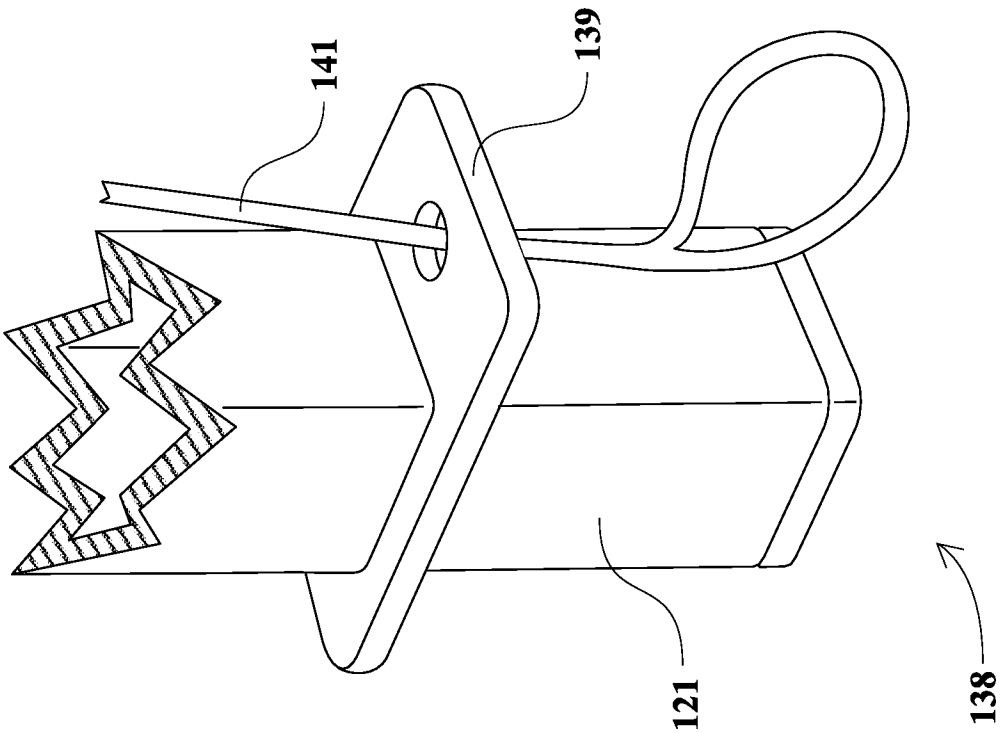


FIG. 21D

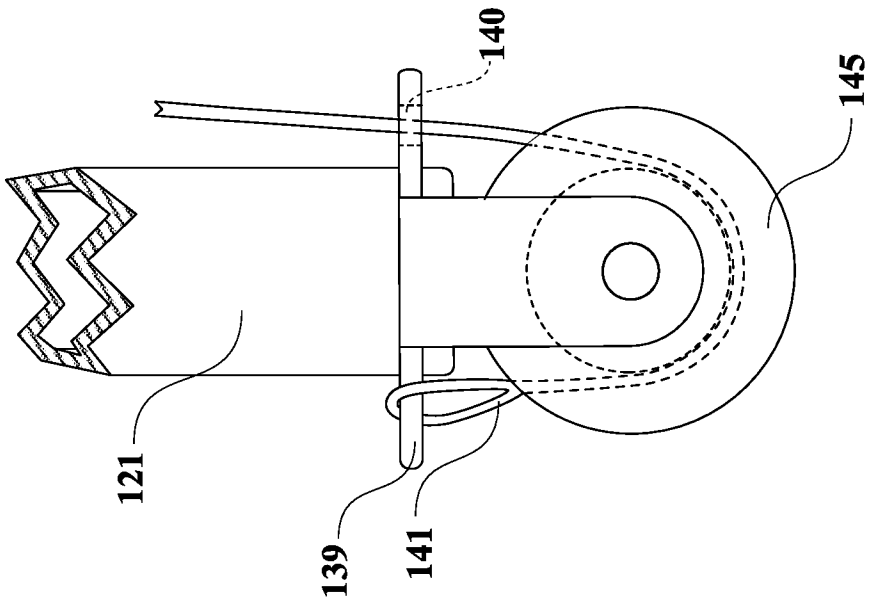


FIG. 21C

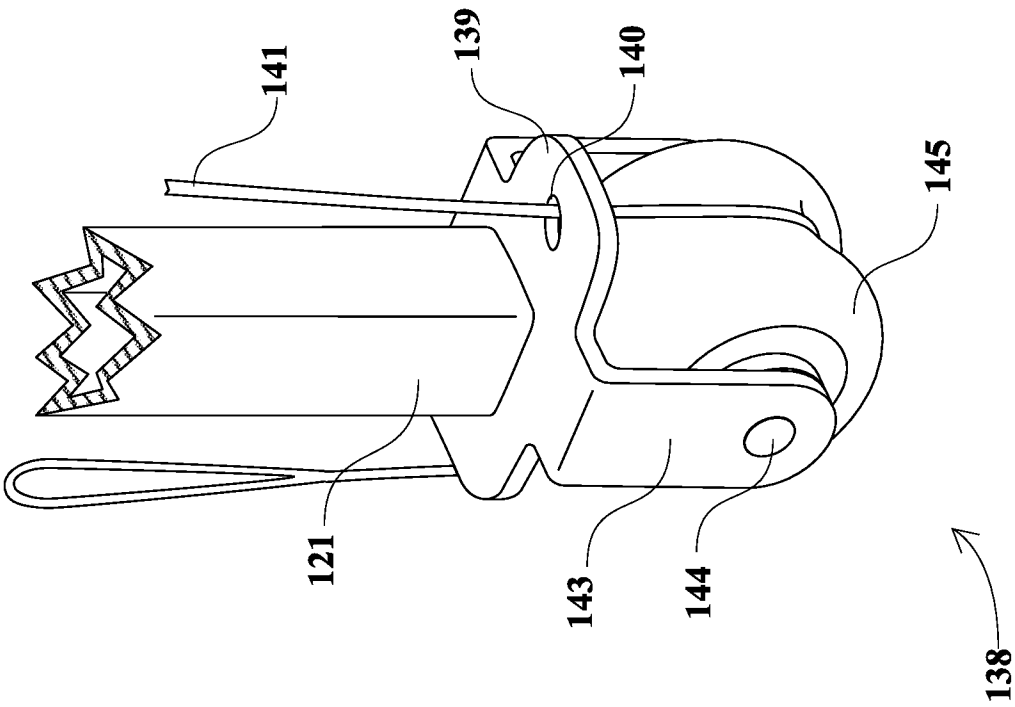


FIG. 22B

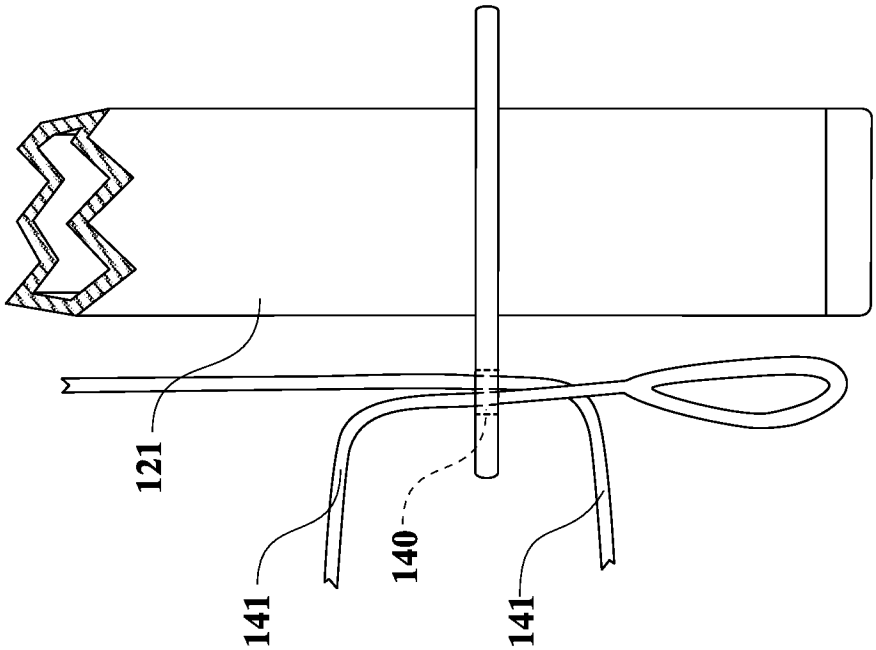
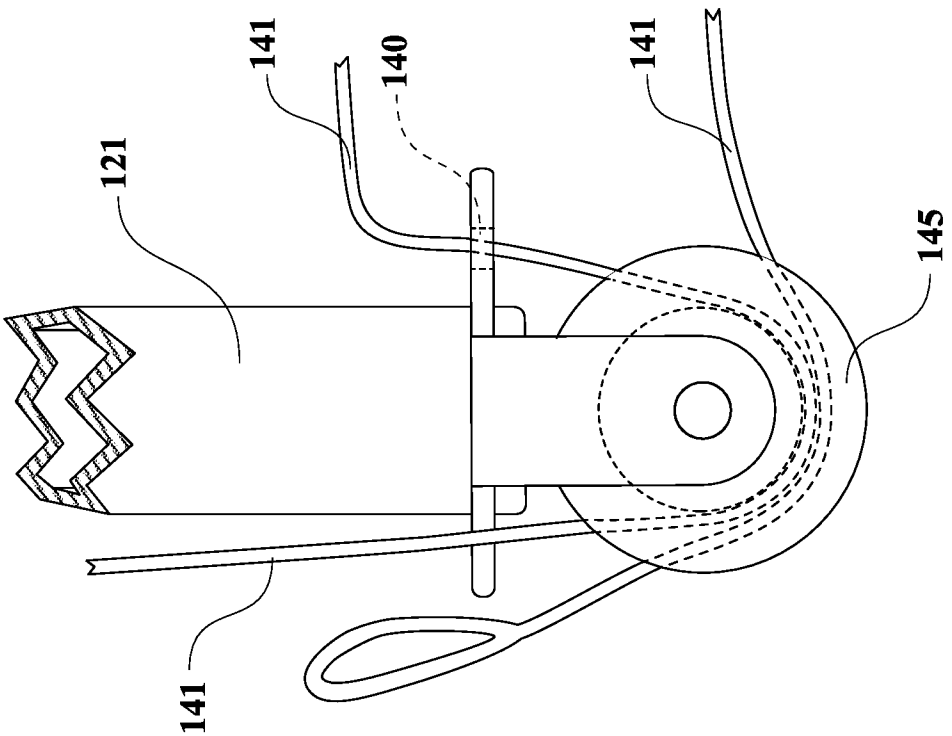


FIG. 22A



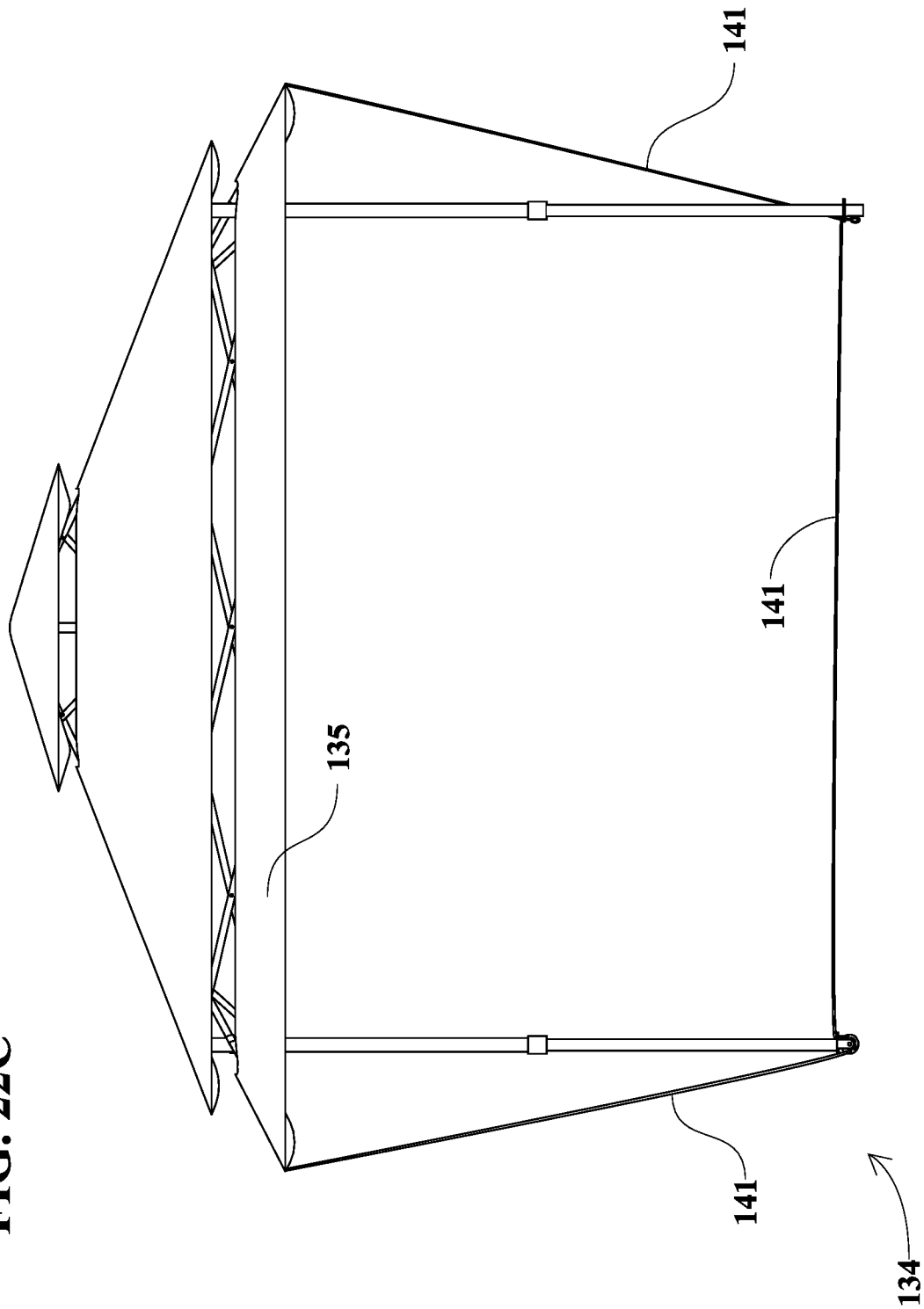


FIG. 22C

FIG. 23

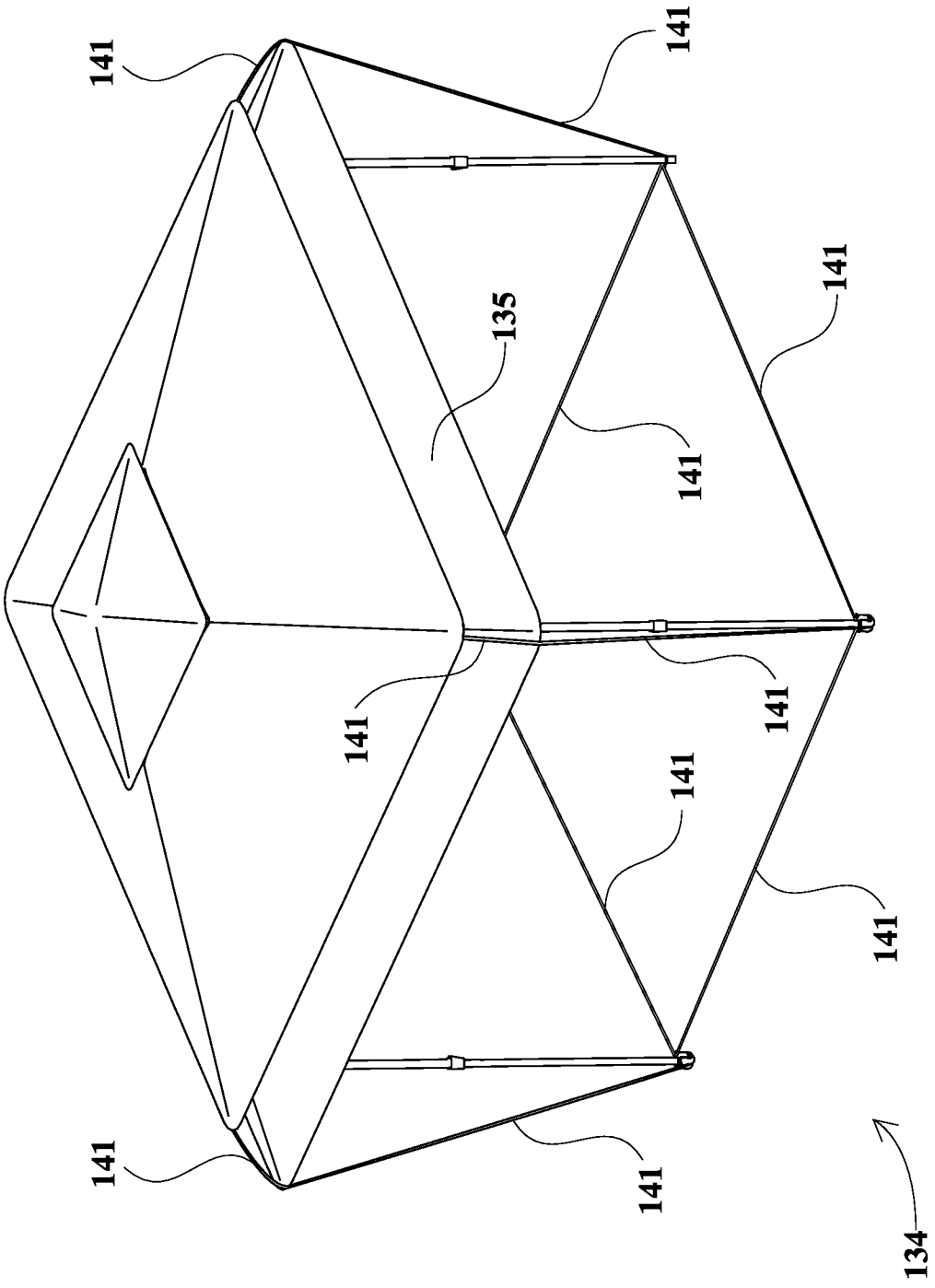


FIG. 24A

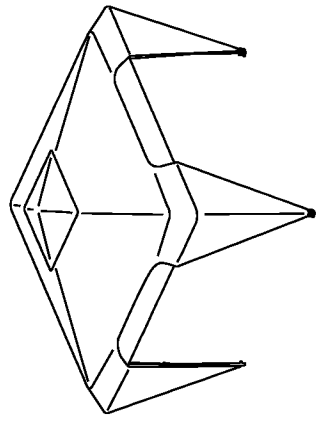


FIG. 24B

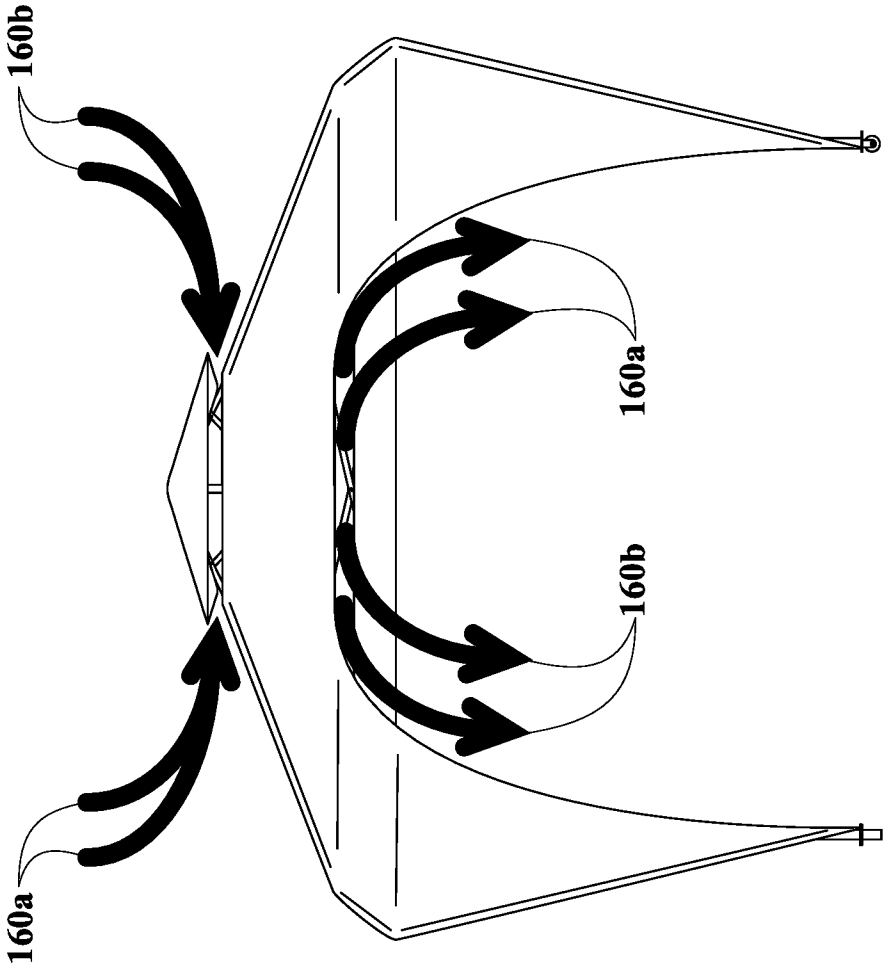


FIG. 24C

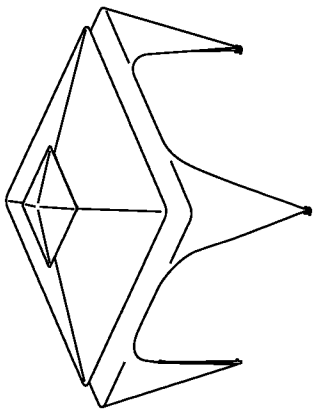


FIG. 24D

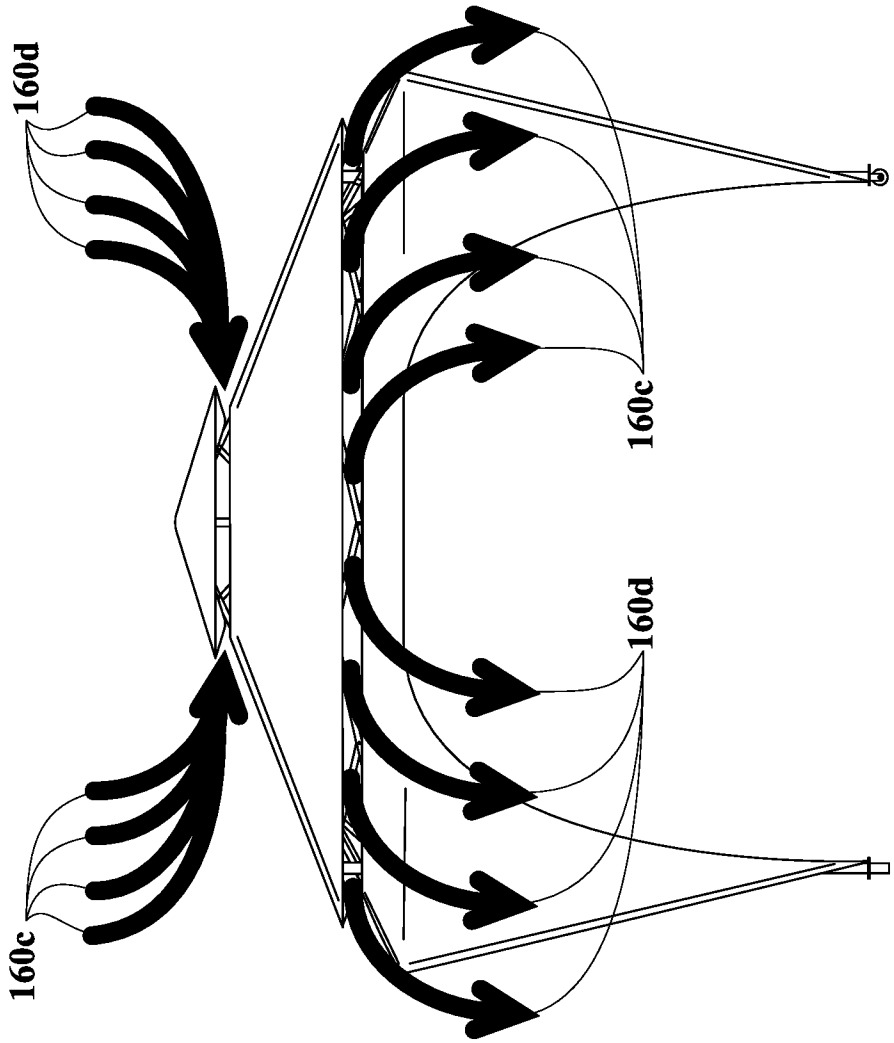


FIG. 25B

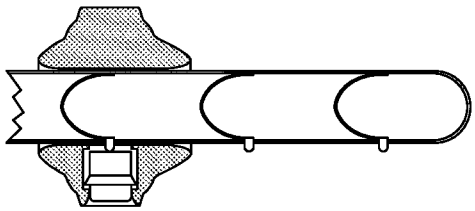


FIG. 26B

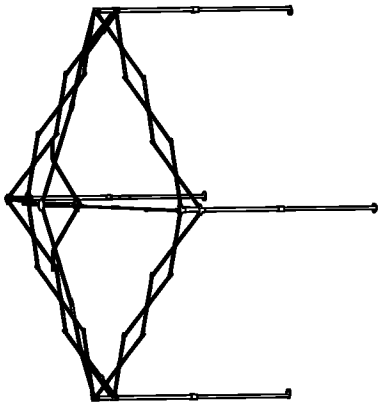


FIG. 25A

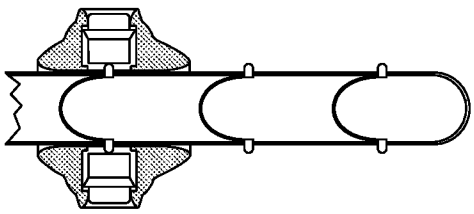


FIG. 26A

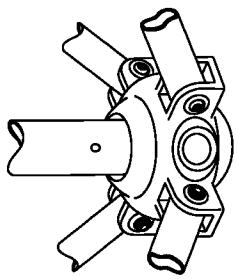


FIG. 27A

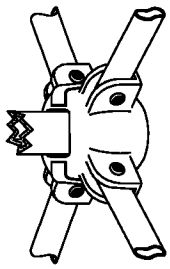


FIG. 27B

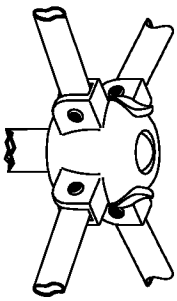


FIG. 27C

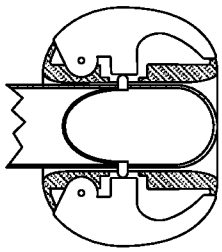


FIG. 27D

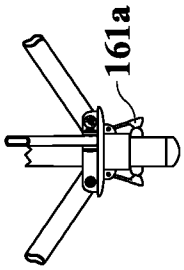


FIG. 27E

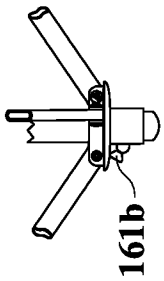


FIG. 27F

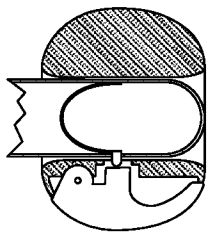


FIG. 28A

FIG. 28B

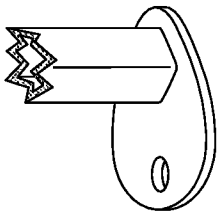


FIG. 28C

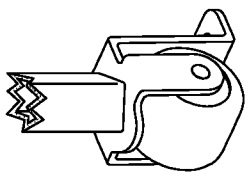


FIG. 28D