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(54) **INSTANT GAZEBO**

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(57) **ABSTRACT**

An instant gazebo is provided which is movable between an open and closed position quickly and which is side supported to allow maximum flexibility for placement of furniture in the gazebo. The gazebo includes an openable and closable canopy to which is connected a screen enclosure which extends completely around the periphery of the canopy. The screen enclosure may remain attached to the canopy in both the open and closed positions of the gazebo. The preferred actuation mechanism for the gazebo includes an elongated curved support arm which slides through a hollow sleeve carried at the top of a supporting mast. The support arm slides through the hollow sleeve as the gazebo is opened or closed. After the support arm is raised by the user, a hand crank is actuated to open the canopy. A rotatable mast support allows the gazebo to be easily rotated about the axis of the mast.

(21) Appl. No.: **11/065,642**

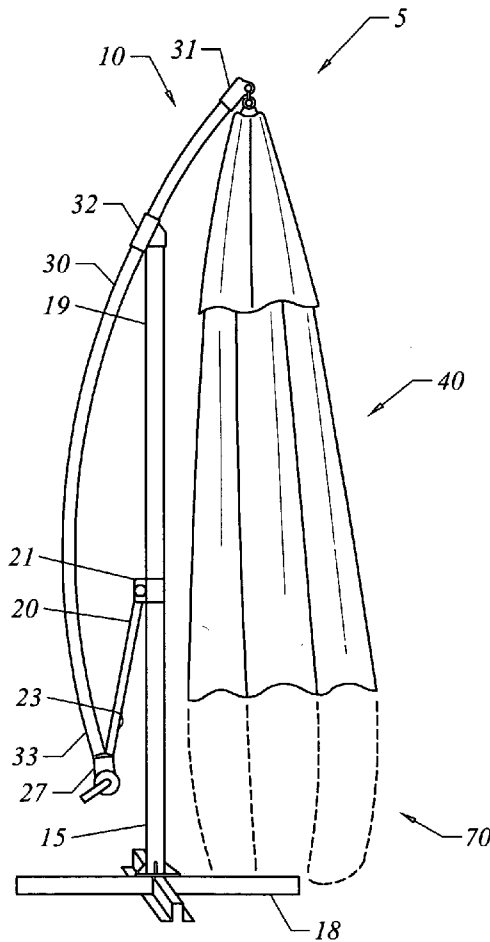
(22) Filed: **Feb. 24, 2005**

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(60) Provisional application No. 60/575,080, filed on May 27, 2004.

(30) **Foreign Application Priority Data**

Feb. 27, 2004 (CN) 200420020535.7
Mar. 25, 2004 (CN) 200420021457.2



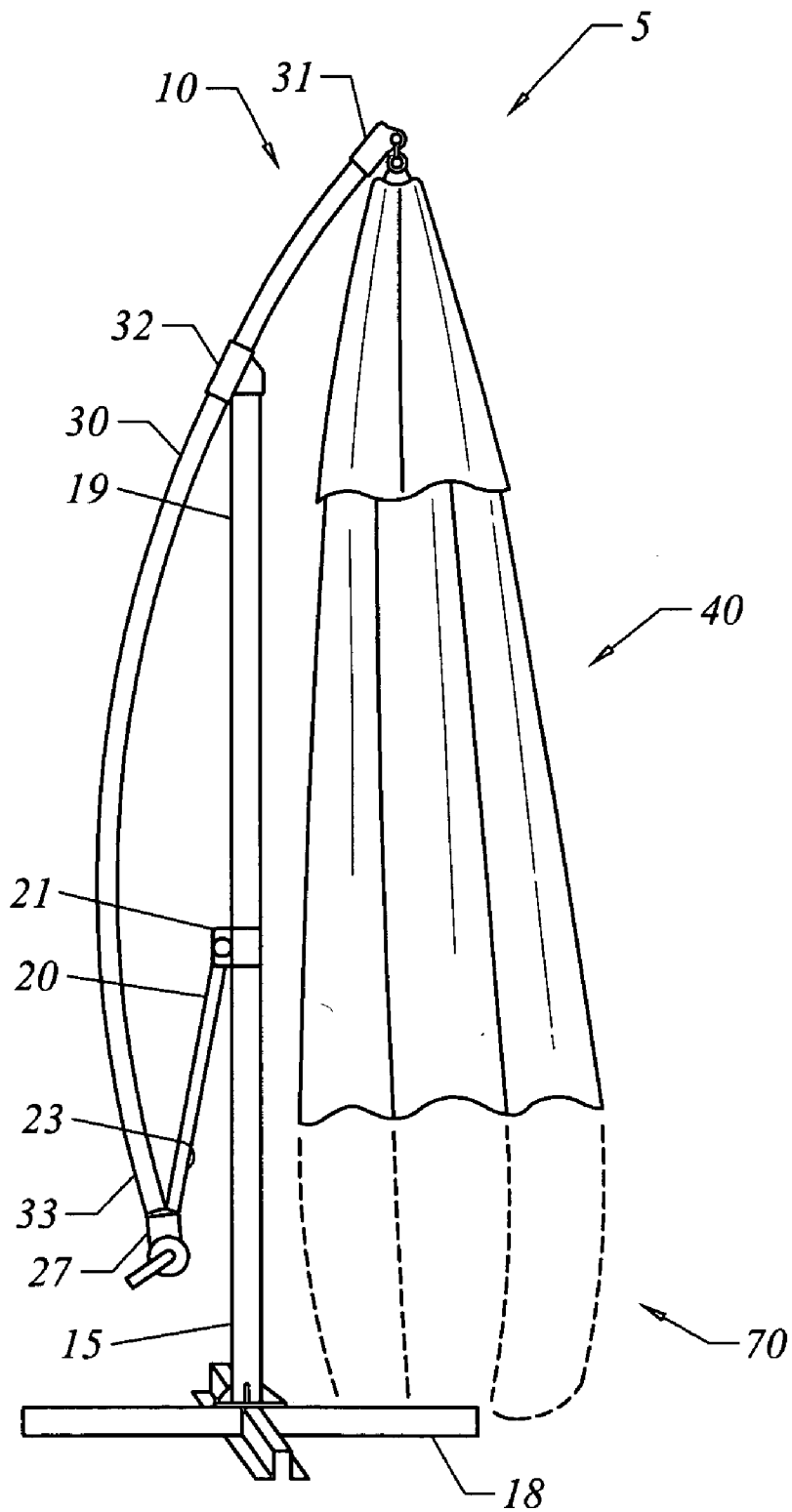


FIG. 1

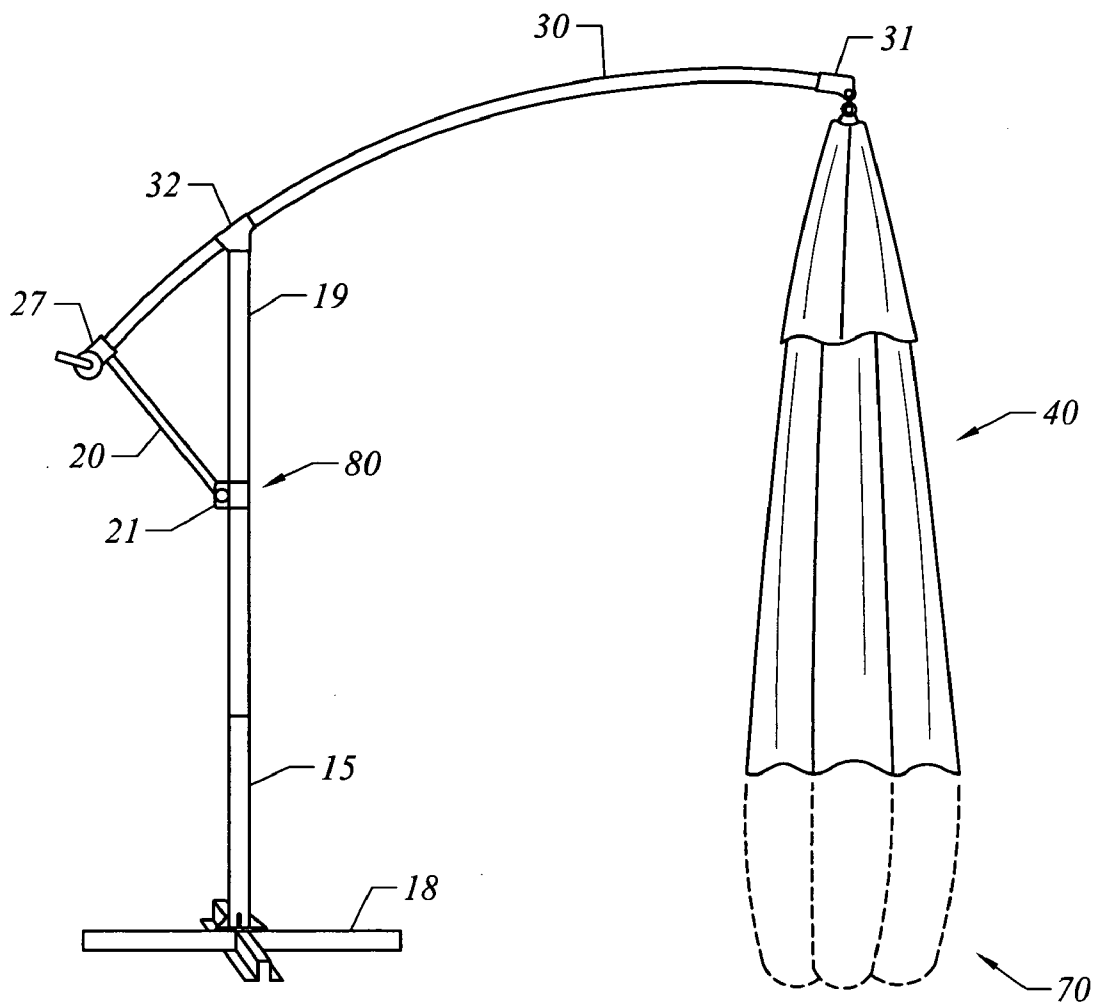


FIG. 2

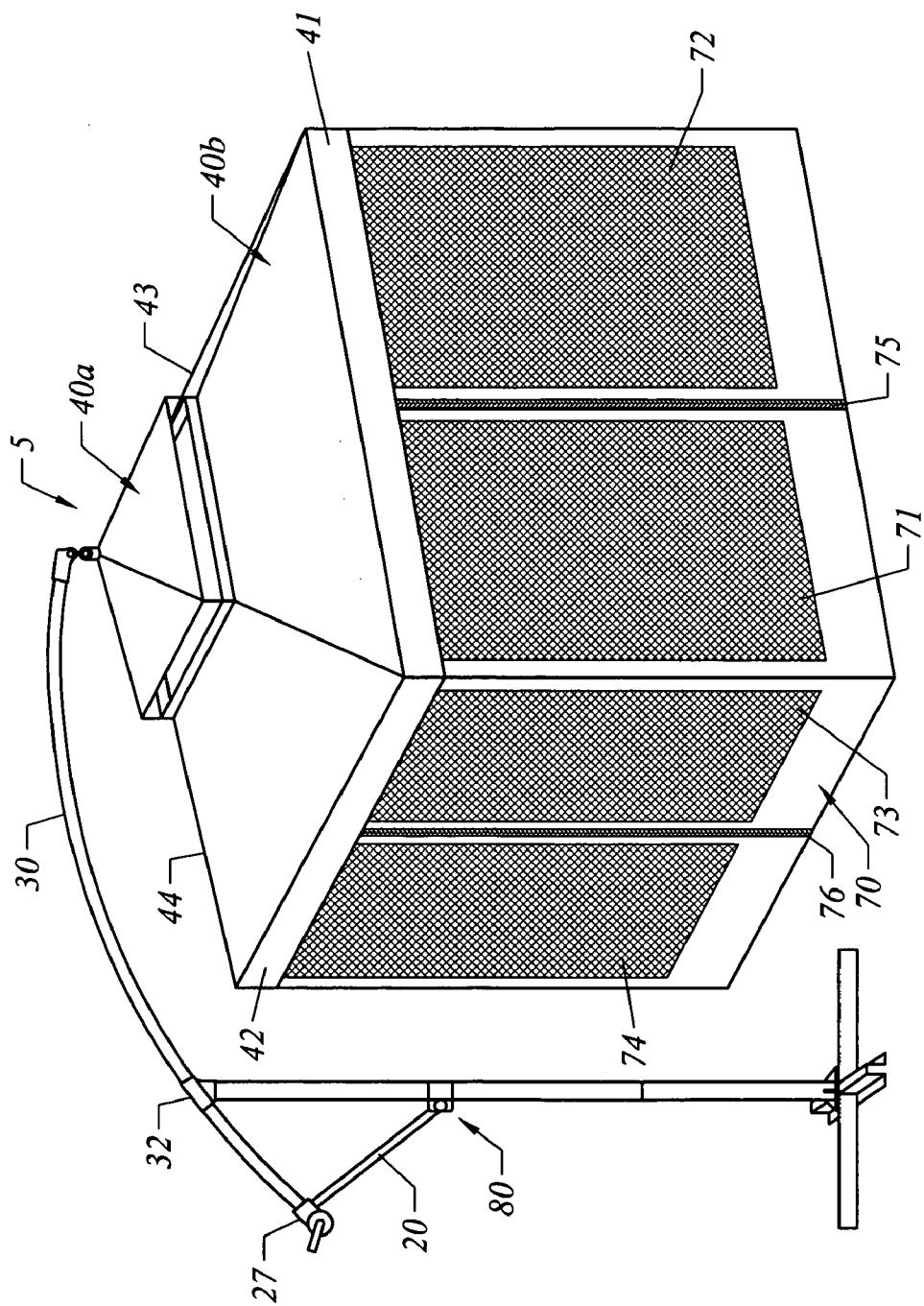


FIG. 3

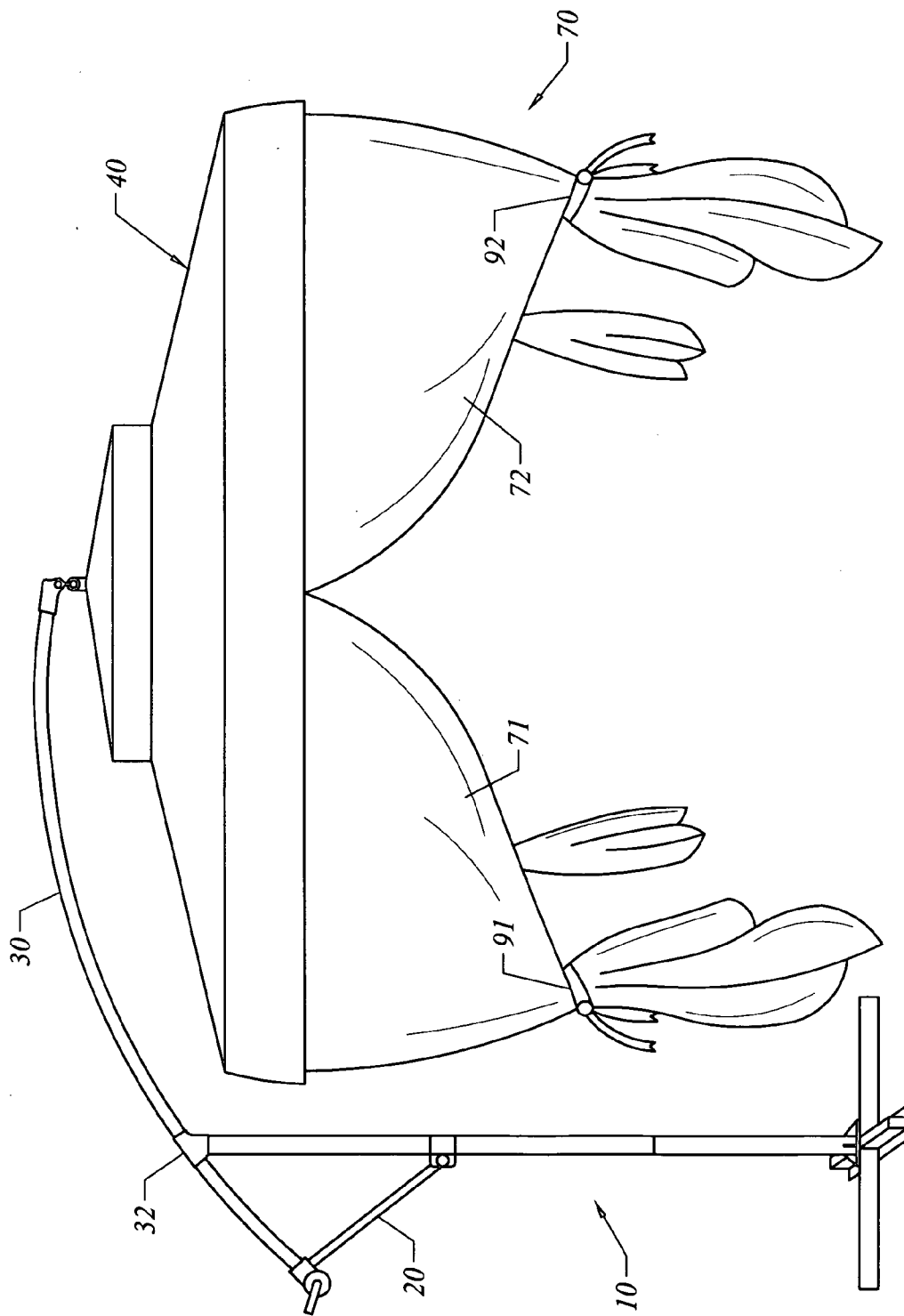


FIG. 4

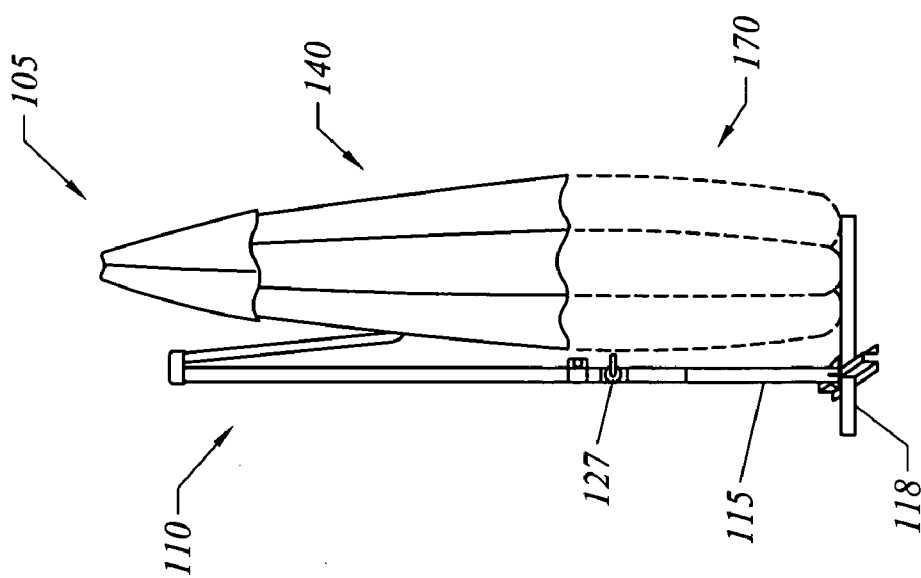


FIG. 5

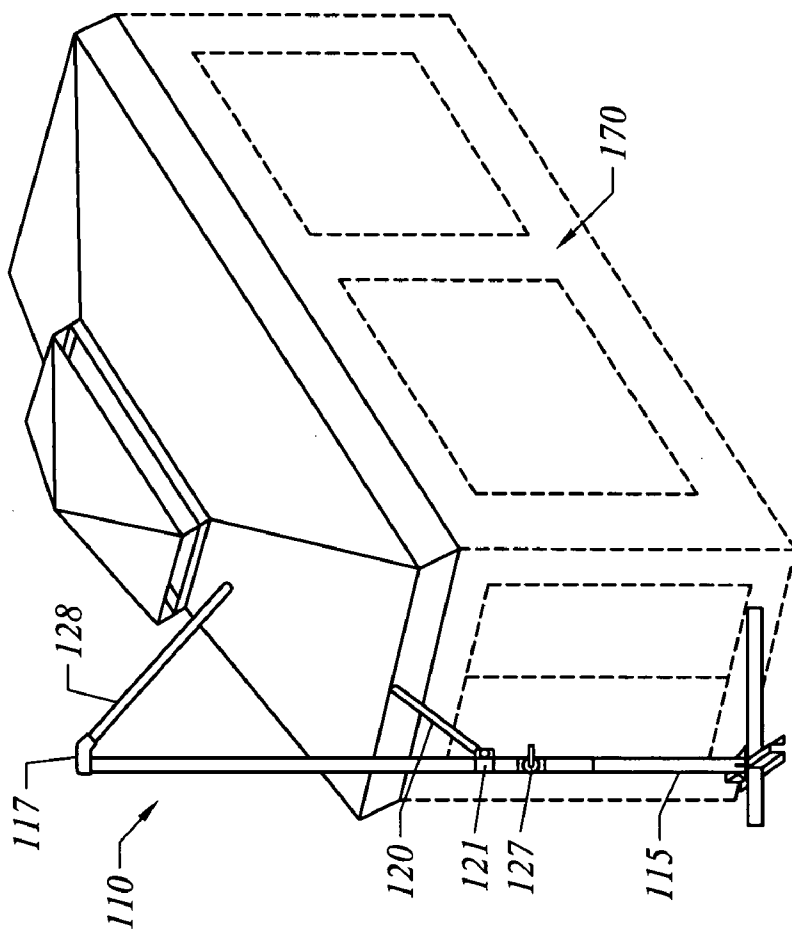


FIG. 6

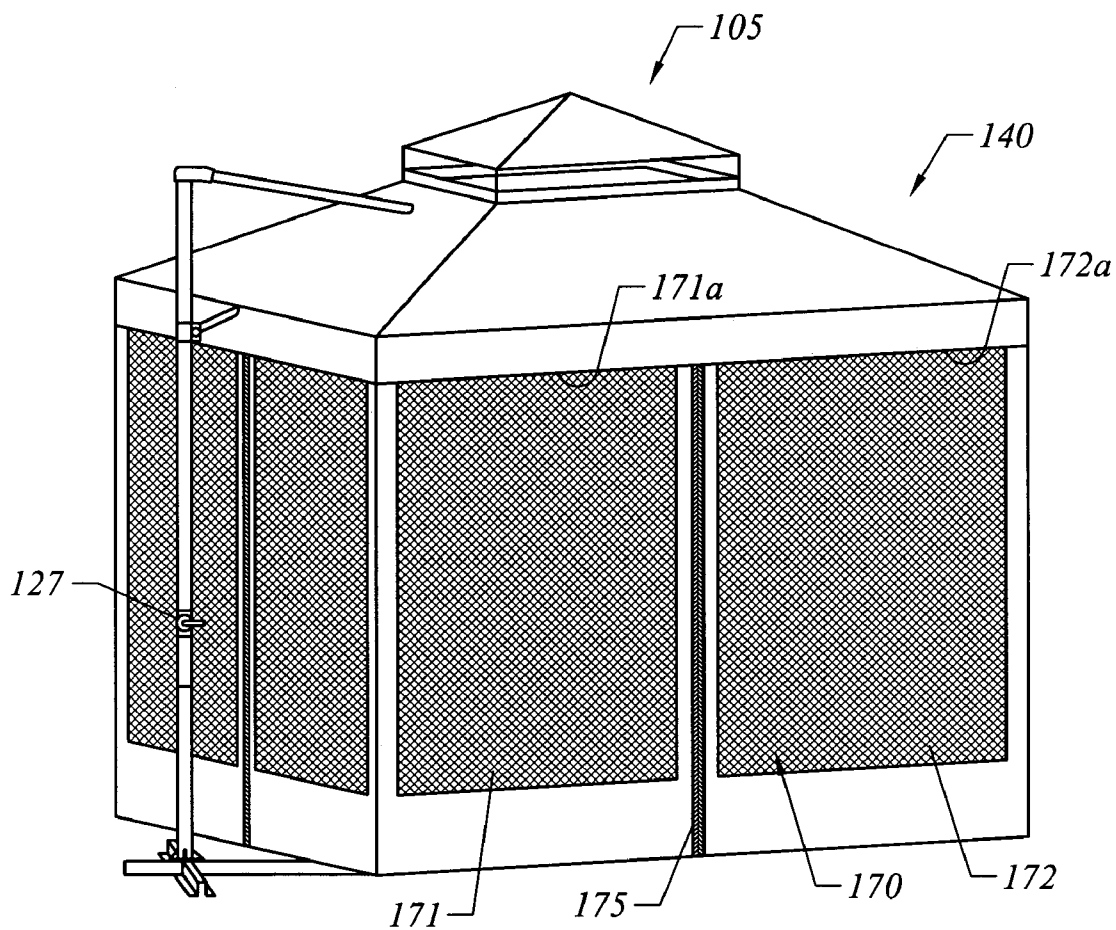


FIG. 7

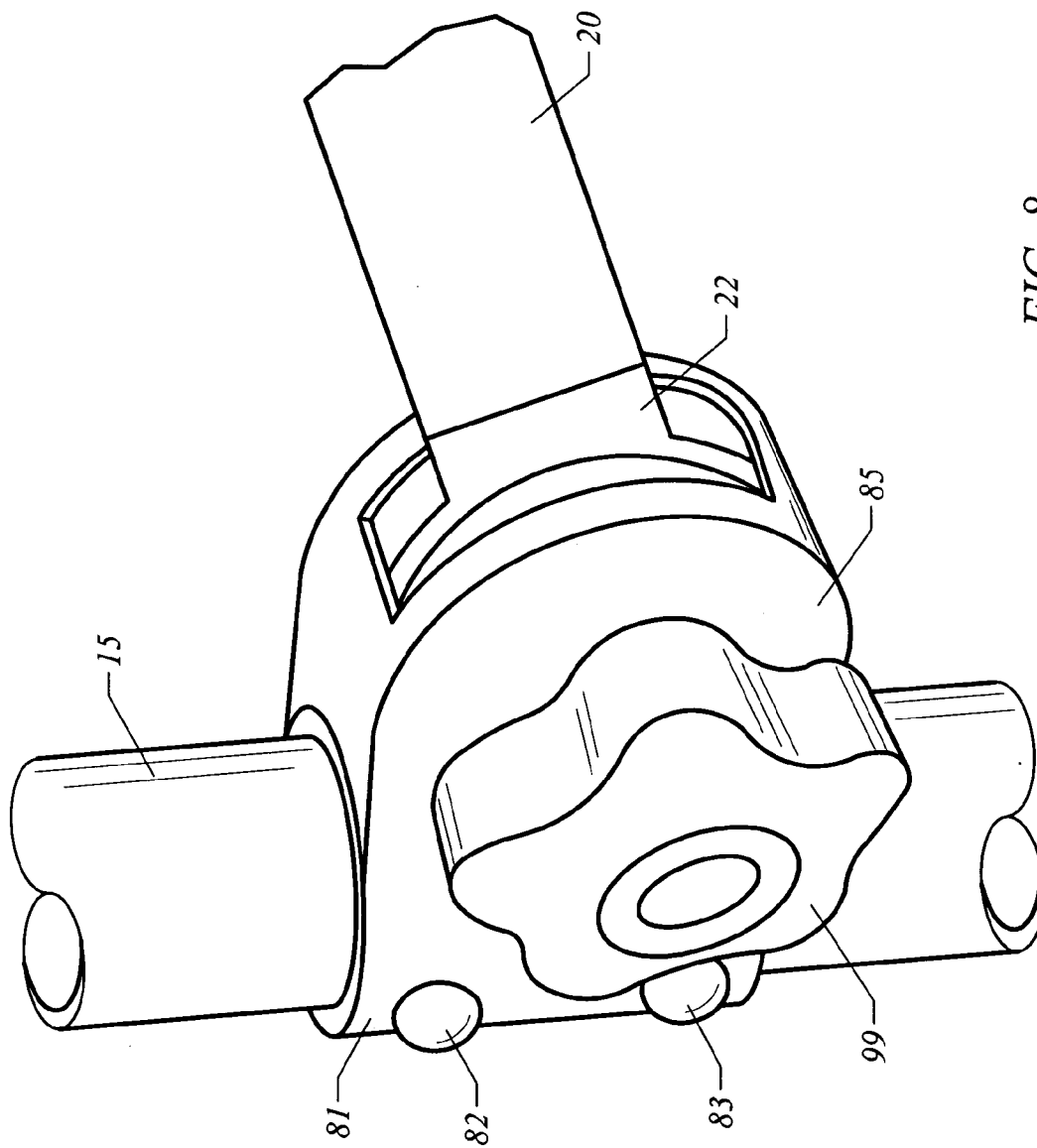


FIG. 8

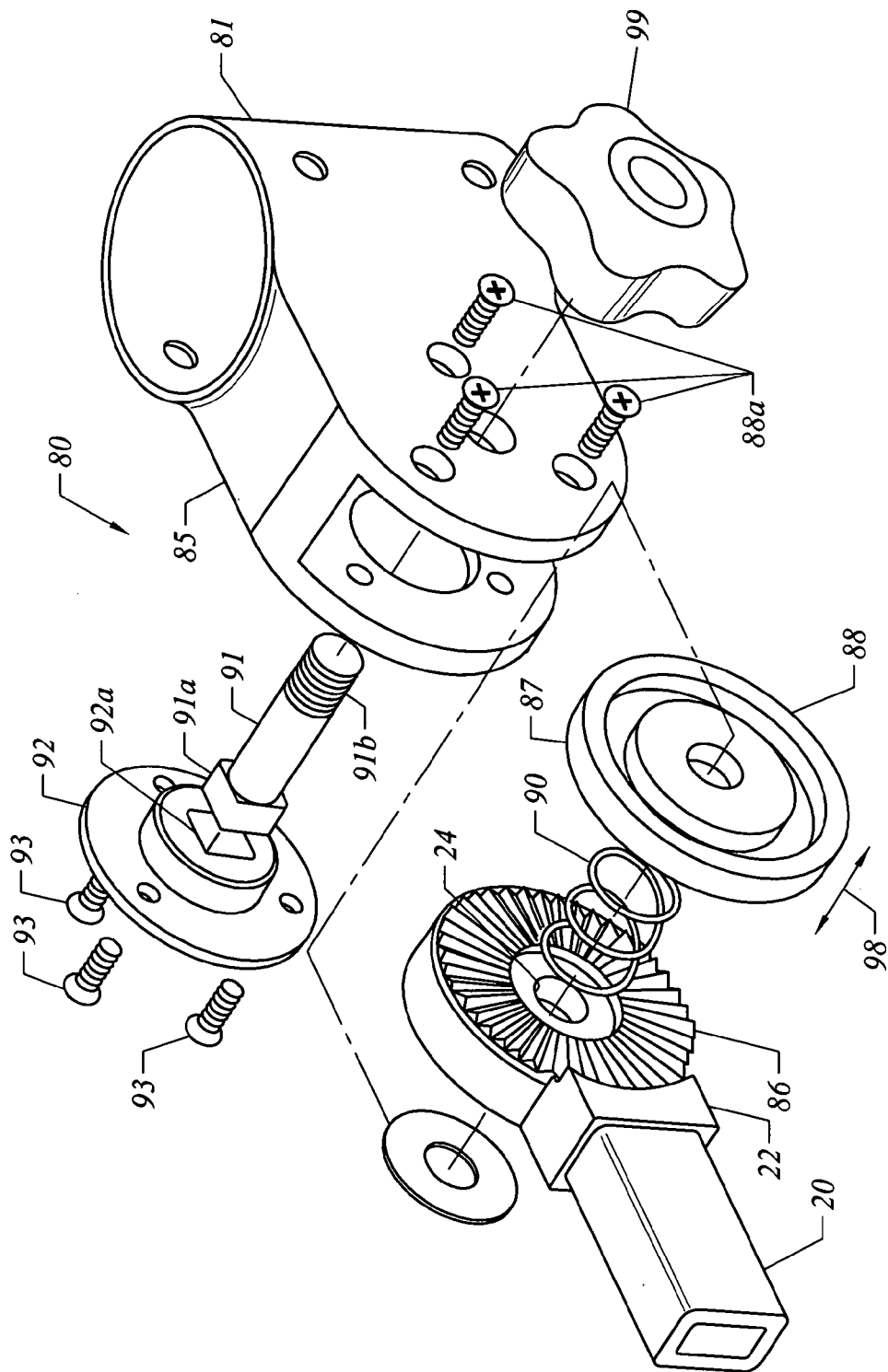


FIG. 9

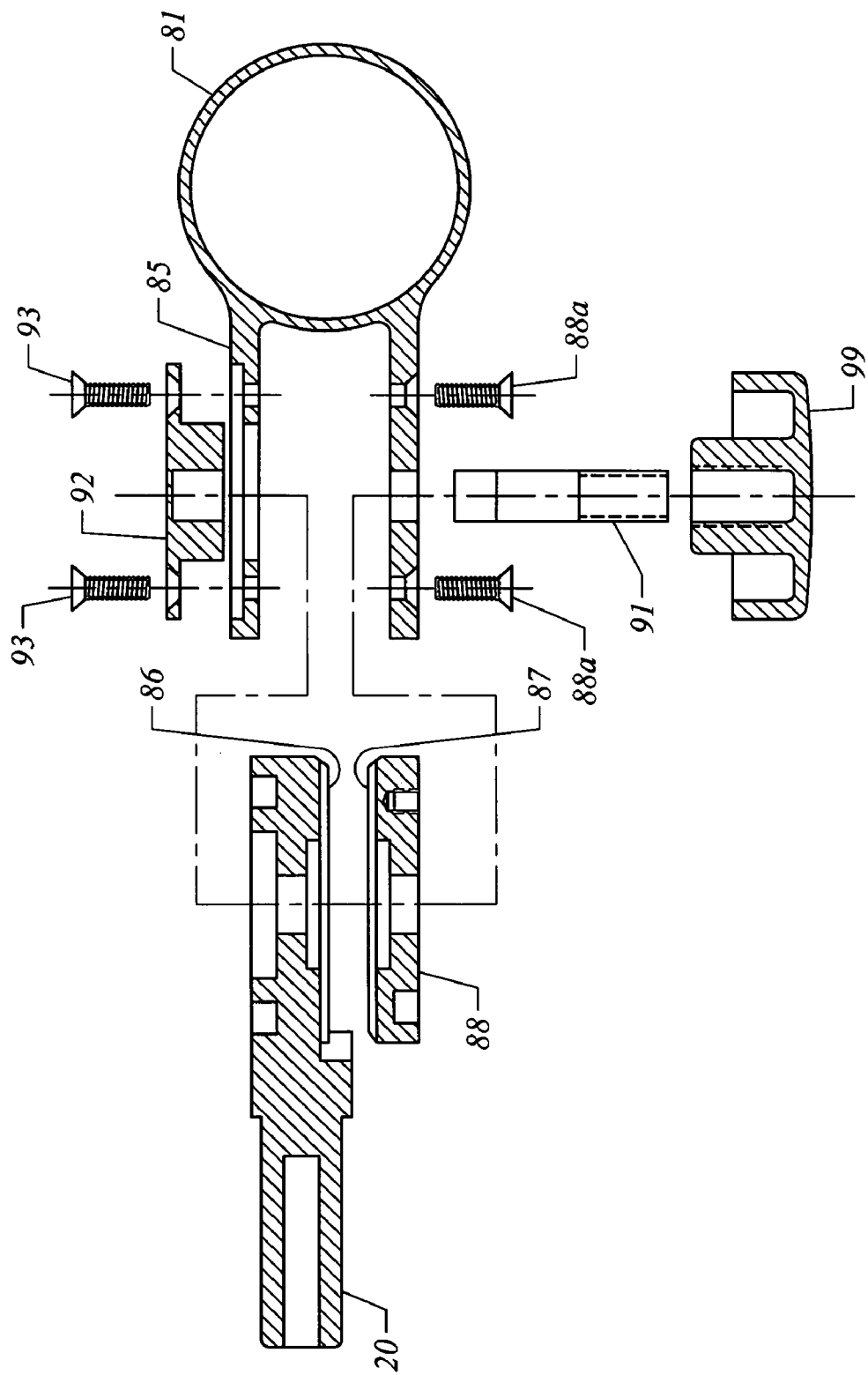


FIG. 10

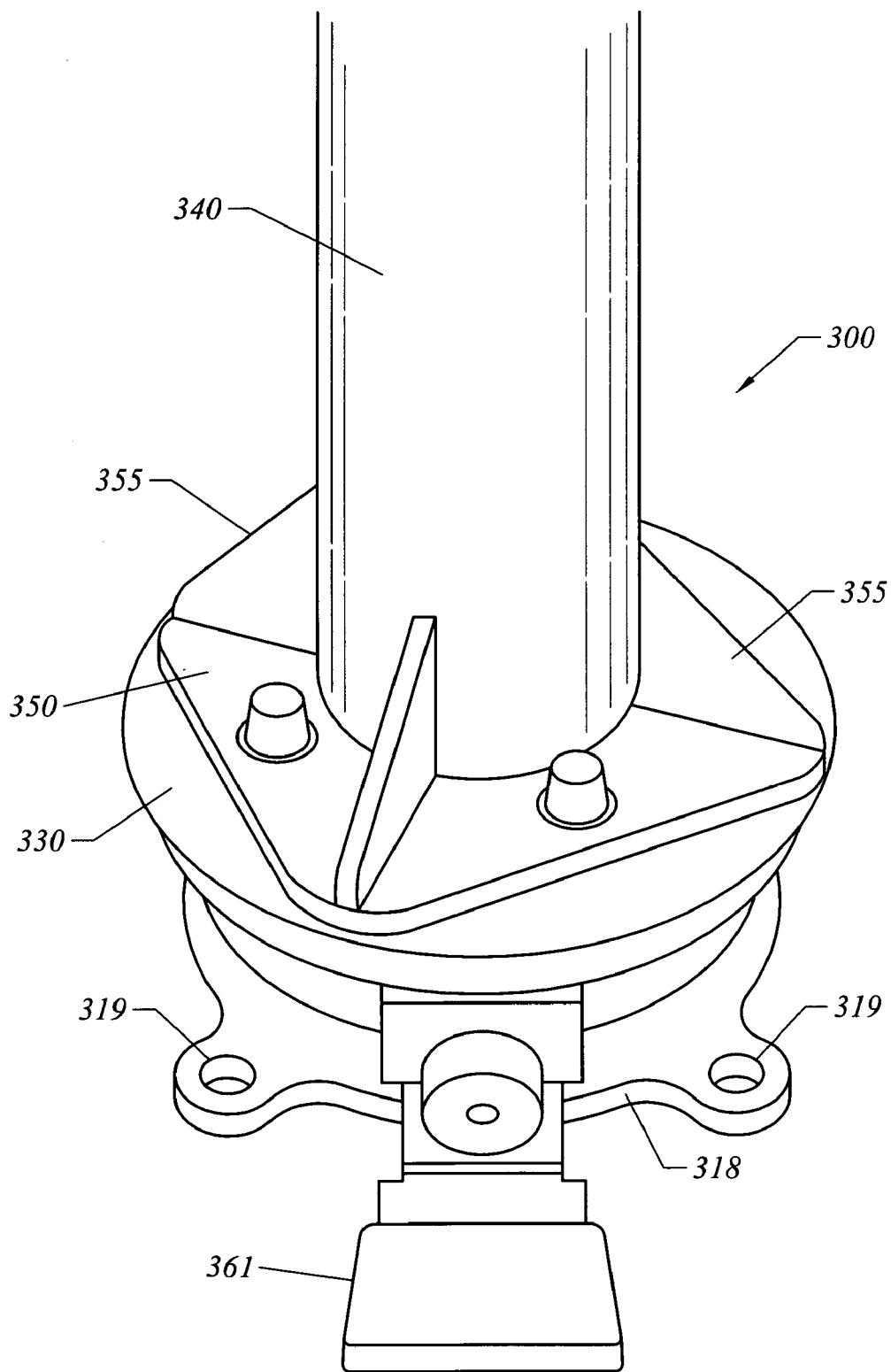
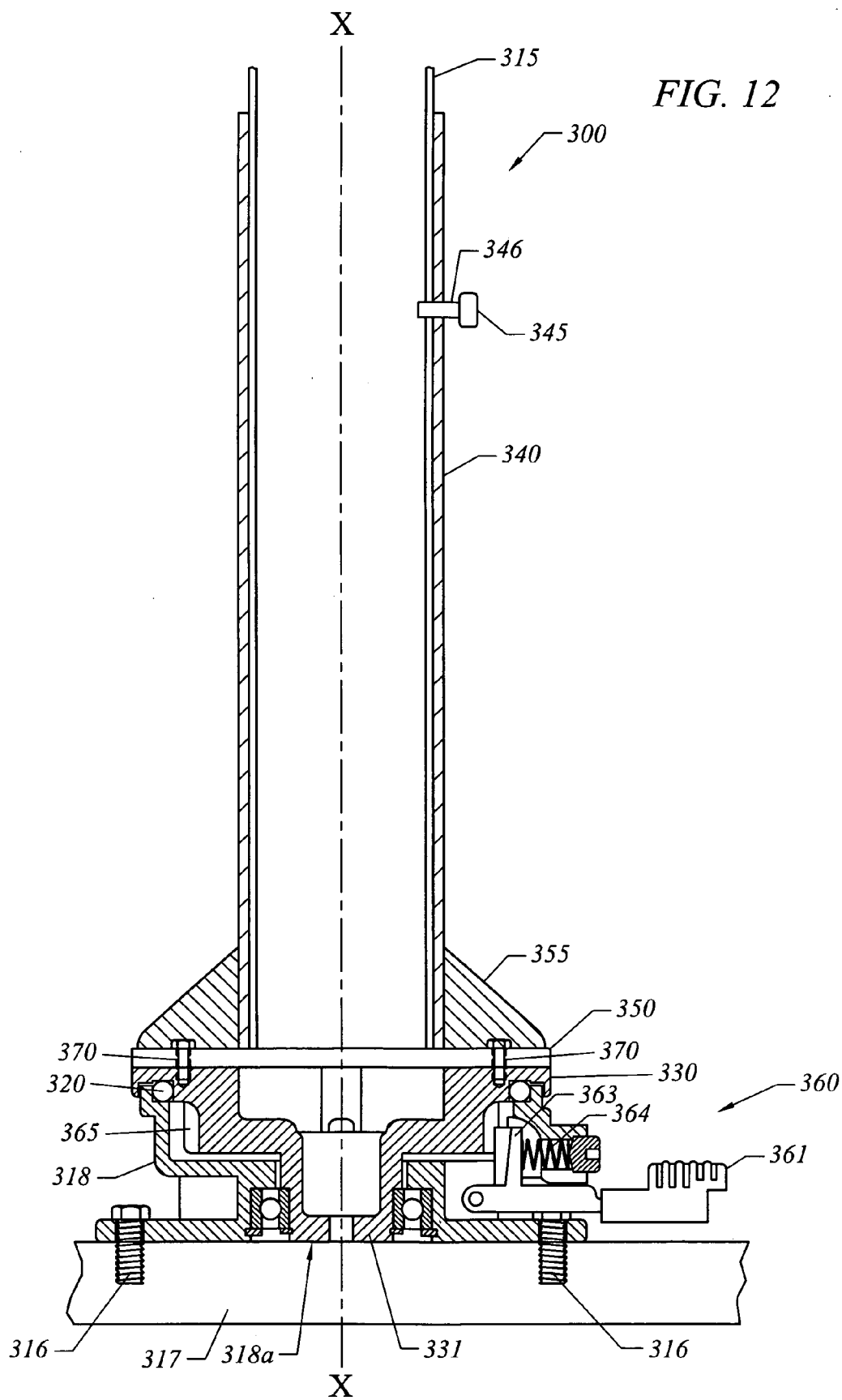


FIG. 11



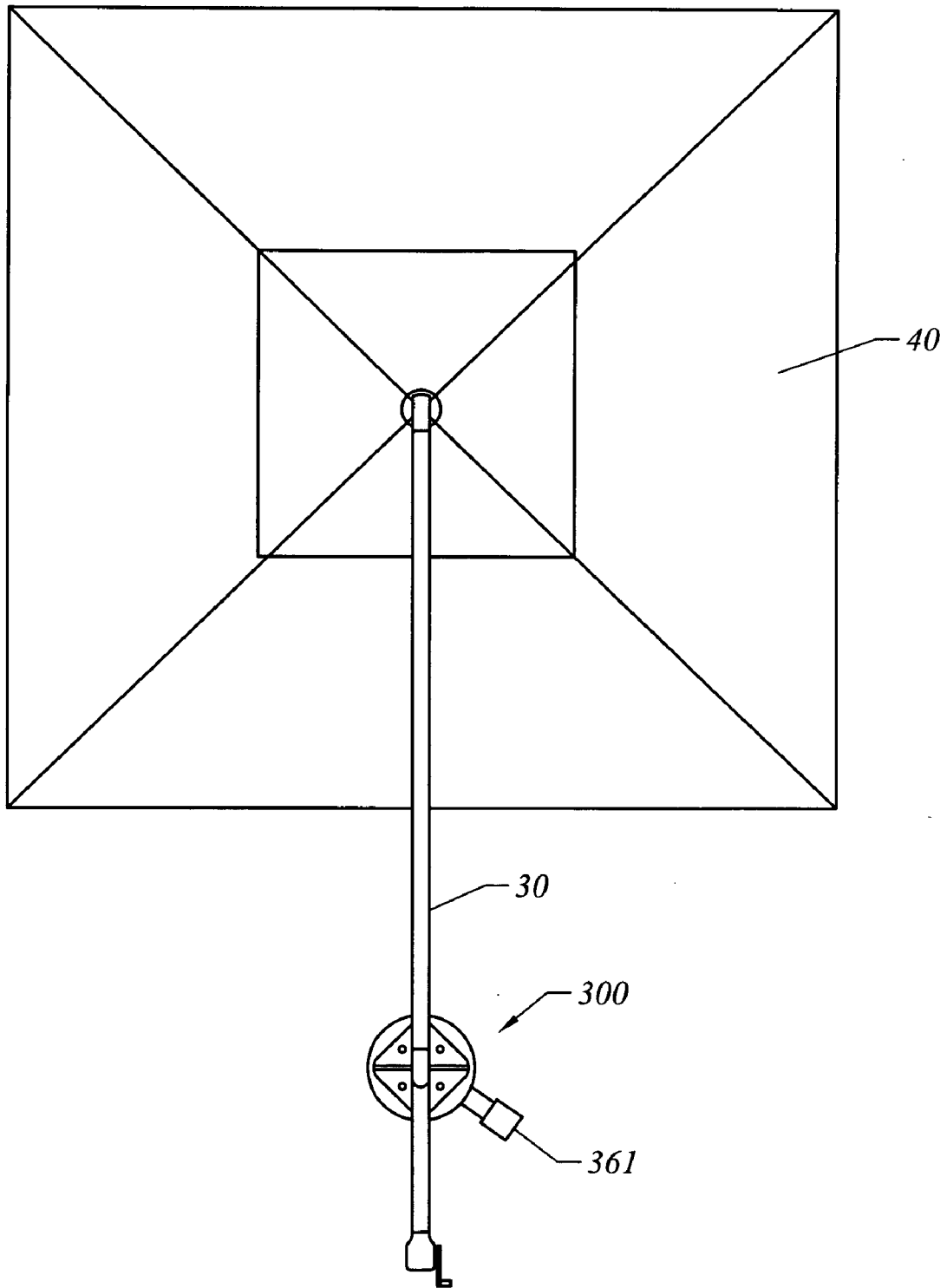


FIG. 13

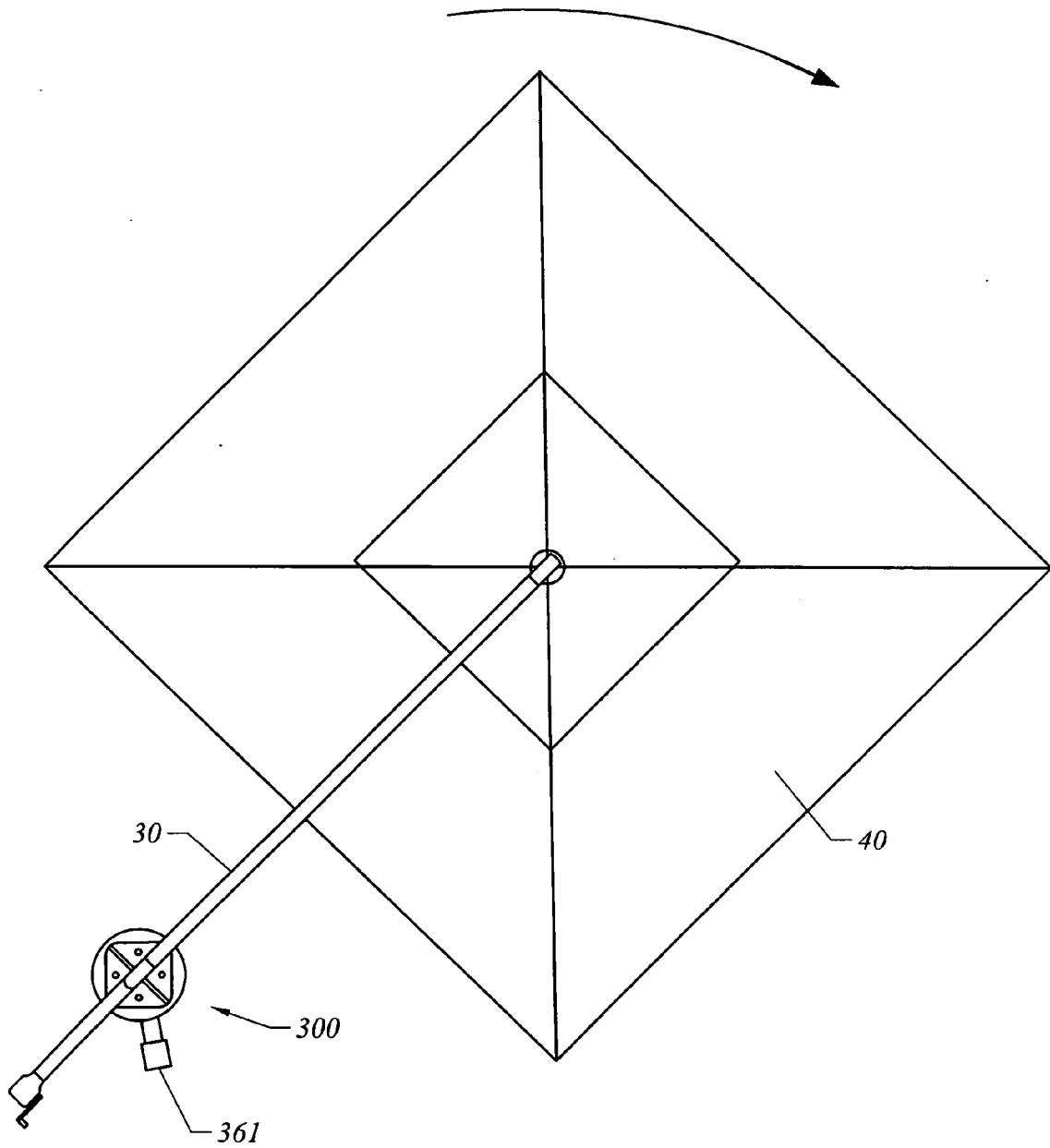


FIG. 14

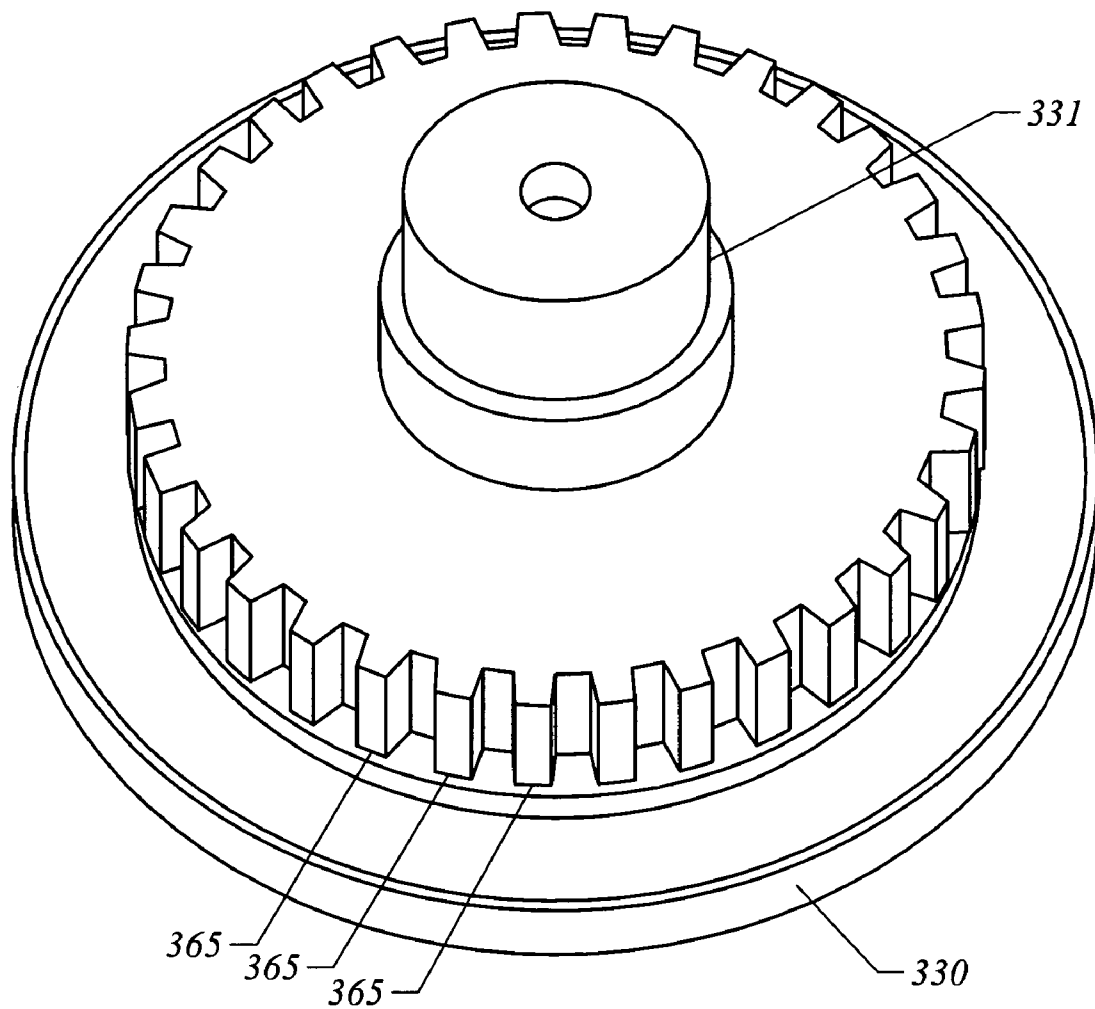


FIG. 15

INSTANT GAZEBO

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of and priority from Republic of China patent application No. 200420020535.7 filed on Feb. 27, 2004; Republic of China patent application No. 200420021457.2 filed on Mar. 25, 2004; and U.S. provisional application No. 60/575,080 filed on May 27, 2004.

BACKGROUND AND BRIEF SUMMARY OF INVENTION

[0002] The present invention relates to a gazebo which may be quickly deployed and then quickly returned to a secure storage position. More particularly, the invention provides, for the first time, a side supported and fully screened or enclosed gazebo capable of being opened or closed in a matter of ten to fifteen seconds.

[0003] The need for improved, quickly deployed gazebos is clear. The prior art includes gazebos requiring several hours by a skilled person to erect and to dismantle, requiring tools and numerous connecting devices. Some states require building permits for structures that require two hours or more to either erect or dismantle.

[0004] The prior art also includes numerous umbrella designs utilizing a central support mast or shaft typically anchored by a table through which the mast or shaft extends. Various insect screens are known in the art which are draped over the center-supported umbrella or suspended from the edges of the umbrella canopy. These center-supported and screened umbrellas have several inherent problems overcome by the side supported (or cantilevered support) aspect of the present invention. First, the requirement of a table to support and stabilize the umbrella severely limits the furniture usable under the canopy. Secondly, the umbrella typically must be erected before insect screens are put in place. Thirdly, the insect screens must typically be removed before the umbrella is closed and stored.

[0005] Side supported or cantilevered umbrellas are also known in the prior art. However, the applicants are unaware of such umbrellas that include insect screens capable of remaining attached to the umbrella as the umbrella is opened and closed.

[0006] The present invention provides an “instant gazebo” which combines for the first time a side-supported or cantilevered umbrella together with insect screens which may remain attached to the umbrella as it is opened and closed.

[0007] The present invention provides for the first time a side-supported and fully screened, or enclosed, insect-proof gazebo which may be deployed easily from its storage position by anyone in a matter of ten to fifteen seconds. The gazebo is returned to a closed, secure storage position in the same amount of time. No tools are required. No special skill is required. No building permits are required.

[0008] The present invention also provides, for the first time, a side supported gazebo with a rotatable mast support, allowing the user to easily rotate the gazebo and mast around the vertical axis of the mast by simply depressing a foot pedal.

[0009] The “instant gazebo” of the present invention may include different actuation and support mechanisms, some of which are described below.

[0010] In one embodiment, a “banana” shaped support arm is simply raised by the user from its storage position to its deployed position. After the support arm is raised, the canopy is opened by turning a hand crank.

[0011] In a second embodiment, a single hand crank is utilized with a support mechanism as shown in U.S. Pat. No. 5,937,882. This mechanism is more complex than the “banana” shaped articulating arm, but allows the device to be opened and closed with a single crank.

[0012] The present invention can be utilized with insect screens or solid fabric side walls, or a combination of both.

[0013] A primary object of the invention is to provide a screened or enclosed gazebo that can either be opened or closed in ten to fifteen seconds by a single person using no tools.

[0014] A further object is to provide a screened or enclosed gazebo supported from the side to allow the use of any arrangement of furniture within the gazebo.

[0015] A further object is to provide a gazebo which may be easily rotated about the vertical axis of the mast.

[0016] Another object is to provide a low cost “instant gazebo” in which an inexpensive, banana shaped arm is used as a key part of the support mechanism.

[0017] Other objects and advantages will become apparent from the following description and drawings, wherein:

BRIEF DESCRIPTION OF THE DRAWINGS

[0018] FIG. 1 is a perspective view of the “instant gazebo” of the present invention shown in its closed position for storage;

[0019] FIG. 2 is a perspective view of the “instant gazebo” of FIG. 1 after the user has raised the elongated and curved support arm and wherein the canopy is still in its closed position;

[0020] FIG. 3 is a perspective view of the “instant gazebo” of FIGS. 1 and 2 after the user has actuated the crank to open the canopy and deploy the gazebo;

[0021] FIG. 4 is a perspective view of the “instant gazebo” of FIGS. 1-3 wherein the screen panels have been tied back at the four corners of the gazebo;

[0022] FIG. 5 is a perspective view of an alternate embodiment of the invention showing the “instant gazebo” in its closed position for storage;

[0023] FIG. 6 is a perspective view of the “instant gazebo” of FIG. 5 in an intermediate position as the gazebo is being deployed;

[0024] FIG. 7 is a perspective view of the “instant gazebo” of FIGS. 5 and 6 showing the gazebo in its fully deployed or opened position;

[0025] FIG. 8 is a perspective view of the locking mechanism for the “instant gazebo” shown in FIGS. 1-4;

[0026] FIG. 9 is an exploded perspective view of the locking mechanism shown in FIG. 8;

[0027] FIG. 10 is a sectional exploded view of the locking mechanism shown in FIGS. 8 and 9;

[0028] FIG. 11 is a perspective view of an optional rotatable mast support;

[0029] FIG. 12 is a schematic representation, partially in section;

[0030] FIG. 13 is a top view of the fully deployed gazebo shown in FIGS. 3 and 4 with the rotatable mast support of FIGS. 11 and 12;

[0031] FIG. 14 is a top view of the gazebo shown in FIG. 13 illustrating use of the rotatable mast support to allow the user to easily rotate the gazebo about the vertical axis of the support mast; and

[0032] FIG. 15 is a bottom, perspective view of one component of the rotatable mast support shown in FIGS. 11 and 12.

DETAILED DESCRIPTION OF THE DRAWINGS

[0033] FIGS. 1-4 illustrate a first embodiment of the "instant gazebo" of the present invention.

[0034] FIG. 1 illustrates the gazebo 5 in its closed position in which it may be stored overnight or for longer periods, depending on climatic conditions. The actuation and support mechanism is shown generally as 10. The two-tiered canopy is shown generally as 40. The upper tier 40a has screening (not shown) between its edges and the lower tier 40b of canopy 40. The screen enclosure is shown generally as 70. The screen enclosure 70 is shown in FIGS. 1 and 2 in phantom in order to more clearly illustrate the actuation mechanism 10. A significant aspect of the present invention is that the screen enclosure 70 may remain attached to the canopy 40 in both the closed position of the "instant gazebo," as shown in FIG. 1, and the fully opened or deployed position, illustrated in FIGS. 3 and 4.

[0035] FIGS. 3 and 4 illustrate the open or fully deployed position of the gazebo 5 wherein the canopy 40 is fully opened and in position with a horizontal attitude. FIG. 3 shows the screen enclosure 70 in its deployed position wherein insects are kept out. FIG. 4 shows the screen enclosure tied back at each corner. Screen enclosure 70 may be moved quickly from its deployed position in FIG. 3 to its tied back position in FIG. 4 by simply unzipping all four vertical zippers (75,76 visible in FIG. 3) between adjacent screen panels and tying the corners together to achieve the attractive looking, side supported gazebo as shown in FIG. 4. Conversely, the screen enclosure can be quickly deployed from its tied back position of FIG. 4 by simply untying the four corner ties (only two corner ties 91 and 92 are visible in FIG. 4) and zipping the four vertical zippers to form a fully screened enclosure as shown in FIG. 3.

[0036] The canopy can have a variety of designs. The design illustrated in FIGS. 1-4 is rectangular. It is understood that the canopy 40 can be square, hexagonal, octagonal or other configurations. The dimensions may also vary, typical dimensions being a 10x12 foot or 10x14 foot rectangle. The open gazebo as shown in FIGS. 3 and 4 is large enough to comfortably seat four people. Furthermore, some of the walls, or all of the walls, may be solid fabric rather than screened walls.

[0037] The actuation mechanism 10 is described more fully below and in Chinese patent application No. 200420020535.7 filed on Feb. 27, 2004 and in Chinese patent application No. 200420021457.2 filed on Mar. 25, 2004, both of which are incorporated herein by reference as though set forth in full. The actuation mechanism 10 includes a mast 15 supported by a support base 18. Base 18 is anchored to a deck or patio by connectors or anchor bolts known in the art. Base 18 may be of various designs including the generally X-shaped base illustrated in FIGS. 1-4. Alternately, base 18 may be a generally circular, heavy cast iron base with a center hole for receiving mast 15. Base 18 may also comprise attachment means for connecting mast 15 to an existing deck or floor and may include a recess set into the ground, pavement or concrete into which the base of mast 15 slides and is supported.

[0038] An articulating arm 20 has a first end 22 pivotally mounted at pivot point 21 near the central region of mast 15. The first end 22 of arm 20 is connected to a locking mechanism 80 described below. The second or free end 23 of arm 20 is connected to and pivotally carries the first end 33 of elongated, curved support arm 30. The second end 23 of articulating arm 20 also carries hand crank 27. Hand crank 27 is used to open the canopy after the user raises the elongated, curved support arm 30 to its second position shown in FIG. 2.

[0039] In the preferred embodiment shown in FIGS. 1-4, an elongated and curved support arm (or "banana" shaped arm) 30 is pivotally connected to the free or second end 23 of articulating arm 20 and, at its distal or second end 31, support arm 30 supports and carries the canopy 40 and the screening or netting material 70. The distal or second end 31 supports an openable array of umbrella arms in response to rotation of the crank 27, as is known in the art and is more fully described in the above-referenced Chinese patent applications. A hollow sleeve 32 connected to the top 19 of mast 15 slidably guides support arm 30. To open or deploy the "instant gazebo," the user physically raises elongated, curved support arm from its first vertical position shown in FIG. 1 to its second, generally horizontal position, shown in FIG. 2. Support arm 30 slides through hollow sleeve between its first position shown in FIG. 1 and its second position shown in FIG. 2. The user then rotates crank 27, causing the canopy 40 to fully open, as shown in FIG. 3. The screen enclosure 70 extends from canopy 40 to the ground and fully encloses the interior space of the "instant gazebo" shown generally as 5.

[0040] In order to return the instant gazebo 5 from its deployed position shown in FIG. 3 to its closed and secured storage position shown in FIG. 1, the user simply rotates crank 27 in the opposite direction. The entire gazebo illustrated in FIG. 3 can be deployed in roughly 10 to 15 seconds from the position shown in FIG. 1 and vice versa.

[0041] The screen enclosure 70 extends fully around canopy 40 and includes eight separate panels, four of which are visible in FIG. 3. Panels 71 and 72 extend along front edge 41 of canopy 40. Panels 73 and 74 extend along the side edge 42 of canopy 40. Panels 71 and 72 are connected to each other by a zipper 75 (or other connector). Panels 71 and 72 may be removably attached to canopy 40 by zippers or otherwise. Similarly, panels 73 and 74 are connected to each other by zipper 76. Similar panels are attached to and carried by side edge 43 and back edge 44 of canopy 40.

[0042] FIG. 4 illustrates how the screen panels may be temporarily tied back with ties 91 and 92 when local insects are inactive. Panels 71 and 72 are unzipped from each other and tied back to their adjacent panels at the four corners of gazebo 5. A very pleasant and elegant appearance is presented in the configuration of FIG. 4.

[0043] FIGS. 5, 6 and 7 illustrate a second embodiment of the invention utilizing an alternate support mechanism as shown and described in U.S. Pat. No. 5,937,882 dated Aug. 17, 1999, incorporated herein by reference as though set forth in full. As shown in FIG. 5, the second embodiment of the "instant gazebo" 105 includes actuation mechanism 110, canopy 140 and attached insect screening or netting 170. Mast 115 is supported by base 118. An articulating arm 120 has a first end 121 which slides up and down mast 115 in response to rotation of crank 127, as described in detail in the aforementioned U.S. Pat. No. 5,937,882. A brace 128 extending from the top 117 of mast 115 supports articulating arm 120 and, together with a series of three pulleys and a cable connected between crank arm 127 and the umbrella canopy, causes deployment of the umbrella canopy 140 to its open position shown in FIG. 7 by rotation of crank 127. The "instant gazebo" illustrated in FIGS. 5-7 may be fully deployed in approximately 10-15 seconds without requiring the use of any tools or special equipment. Similarly, the instant gazebo 105 as illustrated in FIGS. 5-7 may be returned to its folded and storable position illustrated in FIG. 5 by simply turning crank 127 in the opposite direction.

[0044] As shown in FIGS. 5-7, the screening material 170 is shown in phantom in FIGS. 1 and 2 in order to more clearly illustrate the actuation mechanism 110. The present invention allows the user to leave the screening material fully attached to the canopy 140 so that, upon deployment of the gazebo, no extra steps need to be taken to attach the insect screening. When the gazebo is deployed, it is therefore automatically insect free. The user may enter the gazebo by opening zipper 175 between panels 171 and 172.

[0045] In accordance with the invention, the panels that form the complete enclosure 170 may be insect screen panels or may be solid fabric panels or a combination of both.

[0046] An optional feature of the invention is the screening enclosure 170 may be attached to canopy 140 by a series of zippers shown as 171a and 172a.

[0047] A locking mechanism or locking means 80 is shown generally in FIGS. 1-4 and in detail in FIGS. 8-10. The purpose of locking means 80 is to prevent articulating arm 20 from rotating relative to mast 15. Locking means 80 includes collar 81 carried by mast 15. Connectors 82,83 are preferably bolts that prevent collar 81 from sliding upwardly or downwardly on mast 15. Locking means 80 also includes body 85 integrally formed with collar 81 and pivotally connected to articulating arm 20. A first plurality of radially extending teeth 86 is formed at the first end 22 of articulating arm 20 and a second plurality of matching teeth 87 (partially visible in FIG. 9) is formed in member 88 carried by body 85. To lock the articulating arm 20 in position, handwheel 99 (FIG. 8) is rotated clockwise to tighten locking means 80 by engaging teeth 86 with teeth 87. Locking means 80 is unlocked by rotating handwheel 99 in a counterclockwise

direction, causing the two pluralities of teeth 86,87 to separate, allowing articulating arm 20 to rotate relative to mast 15.

[0048] As shown best in FIG. 9, the details of locking means 80 are shown in exploded fashion. A bolt 91 with a square head 91a extends through hole or passageway 24 formed at the end of arm 20 and located in the center of teeth 86. Bolt 91 pivotally connects arm 20 to locking means 80 and mast 15. A hub 92 is formed with a square recess 92a to receive the square head 91a of bolt 91 to prevent bolt 91 from rotating. Hub 92 is securely attached to body 85 by a plurality of screws 93. Member 88 is a recessed disc and is driven back and forth along an axis parallel with arrow 98 and along the longitudinal axis of bolt 91. As the user rotates handwheel 99 clockwise, handwheel 99 threadably engages bolt threads 91b and drives recessed disc member 88 and teeth 87 into engagement with the teeth 86 carried by arm 20. Recessed disc 88 is connected to body 85 by a plurality of screws 88a. Screws 88a prevent disc 88 from rotating around bolt 91, but allow disc to move along the longitudinal axis of bolt 91. Spring 90 is a biasing spring carried between disc 88 and the end of arm 20 and serves to separate teeth 86 and 87 as handwheel 99 is turned counterclockwise to unlock the mechanism 80.

[0049] FIG. 10 is an exploded, sectional view of the locking means 80 shown in FIG. 9.

[0050] The invention includes an optional rotatable mast support means 300 shown in FIGS. 11-14 that allows the user to rotate the gazebo around the vertical axis X-X (FIG. 12) of the mast 315. For example, as the sun moves, it is often desirable to move the gazebo. Many prior art devices require the user to lift the mast and canopy to move the gazebo. The rotatable mast support 300 allows the user to rotate the gazebo in a matter of seconds without having to lift any part of the mechanism. To rotate the gazebo from the position shown in FIG. 13 through a 45° angle relative to mast 315 to the position shown in FIG. 14, the user simply depresses foot pedal 361, rotates the gazebo, and then releases foot pedal 361.

[0051] FIGS. 11 and 12 show the details of rotatable mast support means 300. A fixed base 318 is provided with a plurality of openings 319, through which anchor bolts, lag screws or similar connectors 316 extend to securely attach base 318 to the user's deck, patio or other surface 317. Base 318 carries a bearing 320 on its upper surface which carries a rotatable, circular plate 330. A mast support sleeve 340 is rigidly attached to plate 330 by a flange 350 welded to sleeve 340. Reinforcing braces 355 are welded to sleeve and flange 340. A plurality of connectors 370 (bolts or threaded screws) attaches flange 350 to plate 330. Sleeve 340 extends upwardly a sufficient distance to support the mast 315 and gazebo 5. For an 8 foot by 8 foot gazebo, sleeve 340 should be approximately 18 inches tall. Sleeve 340 is sized to slidably receive mast 315. A handwheel 345 and set screw 346 are carried by sleeve 340 to prevent mast 315 from rotating or sliding relative to sleeve 340.

[0052] The rotatable mast support 300 includes a locking means shown generally as 360. Locking means 360 includes depressible foot pedal 361, a first tooth (or plurality of teeth) 363 is carried by foot pedal 361, and a second plurality of teeth 365 is carried around the periphery of the lower surface of rotatable, circular plate 330. To disengage the locking

means 360, the user depresses foot pedal 361. To engage locking means 360, the user simply releases foot pedal 361. A biasing spring 364 drives foot pedal 361 upwardly, whereby tooth 363 on pedal 361 engages teeth 365 on circular plate 330. The rotatable mast support 300 is preferably made of steel. Circular plate 330, including teeth 365, is a single piece of cast metal and includes an integrally cast, downwardly extending shaft 331 which is pressed into opening 318a in the center of base 318.

[0053] FIG. 15 shows circular plate 330 inverted to more clearly illustrate the second plurality of teeth 365 and shaft 331.

[0054] The foregoing description of the invention has been presented for purposes of illustration and description and is not intended to be exhaustive or to limit the invention to the precise form disclosed. Modifications and variations are possible in light of the above teaching. The embodiments were chosen and described to best explain the principles of the invention and its practical application to thereby enable others skilled in the art to best use the invention in various embodiments and with various modifications suited to the particular use contemplated. The scope of the invention is to be defined by the following claims.

What is claimed is:

- 1. An instant gazebo readily movable between an open and closed position, comprising:
 - a support base,
 - a mast carried by said support base,
 - an articulating arm having a first end pivotally mounted to said mast and having a second end,
 - an elongated, curved support arm having a first end pivotally connected to said second end of said articulating arm and having a second end,
 - a hollow sleeve carried by said mast, said elongated, curved support arm extending through said hollow sleeve,
 - a canopy carried by said second end of said elongated, curved support arm,
 - a screen enclosure connected to said canopy and extending completely around the periphery of said canopy,
 - said articulating arm and said elongated, curved support arm being movable between a first, closed position in which said support arm is generally vertical and said canopy is closed and hangs adjacent said mast, and a second position in which said elongated, curved support arm is generally horizontal and in which said canopy is closed but is spaced from said mast, and
 - crank means for opening and closing said canopy and said screen enclosure.

2. The apparatus of claim 1 further comprising locking means carried by said mast for preventing rotation of said articulating arm relative to said mast.

3. The apparatus of claim 2 wherein said locking means comprises:

- a rotatable handwheel,
- a plurality of radially extending teeth carried by said first end of said articulating arm, and
- a second plurality of radially extending teeth that move into and out of engagement with said first plurality of teeth in response to rotation of said handwheel.

4. The apparatus of claim 1 wherein said canopy is side supported in both its first closed position and in its second fully deployed position.

5. The apparatus of claim 1 wherein said canopy is rectangular and wherein said screen enclosure includes two screen panels zipped together along each side of said rectangle, whereby said screen panels may be readily unzipped and tied back at each corner of said rectangle.

6. The apparatus of claim 1 wherein said screen enclosure includes one or more walls that are solid, unscreened fabric.

7. The apparatus of claim 1 wherein said mast has a vertical axis and further comprising rotatable mast support means for allowing said instant gazebo to rotate around said vertical axis of said mast.

8. The apparatus of claim 7 wherein said rotatable mast support means comprises:

- a fixed base,
- a mast support sleeve for slidably carrying said mast, and
- bearing means carried by said fixed base for rotatably carrying said mast support sleeve.

9. The apparatus of claim 7 further comprising locking means for preventing rotation of said rotatable mast support means.

10. An instant gazebo readily movable between an open and closed position, comprising:

- a support base,
- a mast carried by said support base,
- a canopy,
- a screen enclosure connected to said canopy and extending completely around the periphery of said canopy,
- canopy support means for supporting said canopy from the side of said mast, said canopy support means being movable between first closed position in which said canopy is generally vertical, folded and lies adjacent said mast, and a second extended position in which said canopy may be fully opened, and
- actuation means for moving said canopy between said open and closed positions.

* * * * *