

Dec. 9, 1958

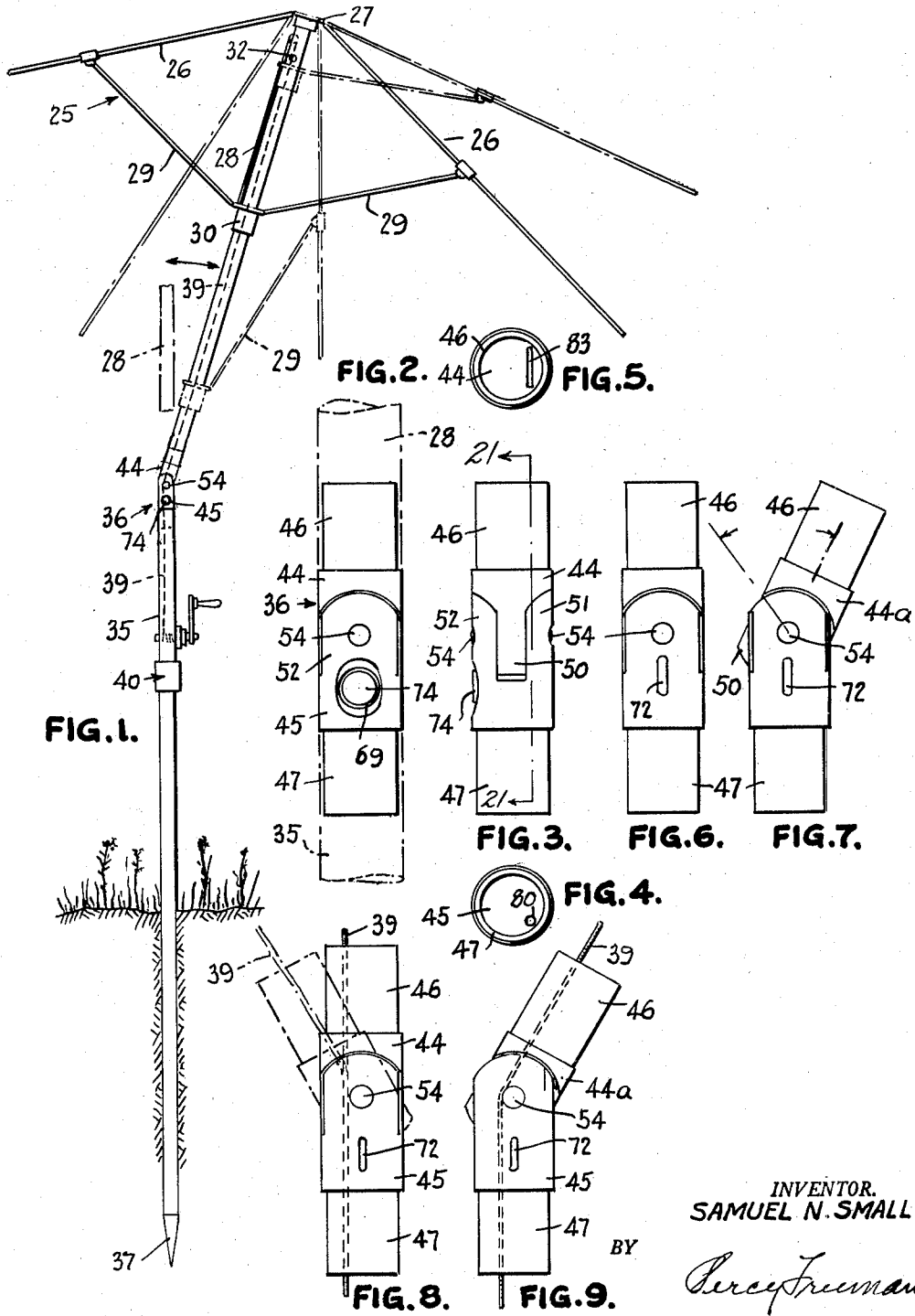
S. N. SMALL

2,863,466

TILTABLE GARDEN UMBRELLA

Filed Dec. 26, 1956

2 Sheets-Sheet 1



Dec. 9, 1958

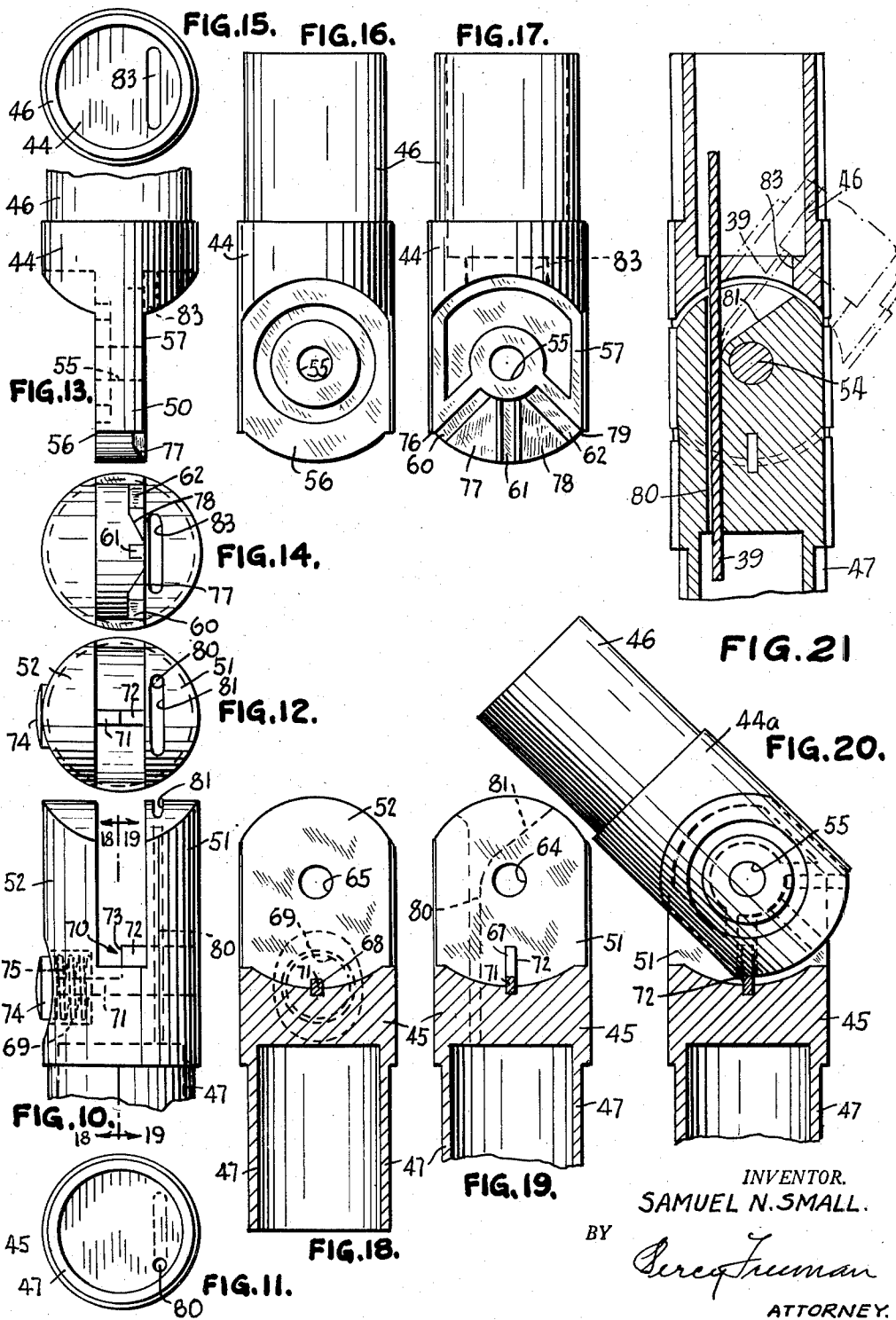
S. N. SMALL

2,863,466

TILTABLE GARDEN UMBRELLA

Filed Dec. 26, 1956

2 Sheets-Sheet 2



1

2,863,466

TILTABLE GARDEN UMBRELLA

Samuel N. Small, Valley Stream, N. Y., assignor to Alfred G. Cohen and Paul Weiss, Flushing, N. Y.

Application December 26, 1956, Serial No. 630,679

7 Claims. (Cl. 135—20)

This invention relates to garden and beach umbrellas and, more particularly, to a tiltable support for the canopy thereof.

In view of the fact that canopies for garden umbrellas are usually heavy and of large size, they are difficult to move between an open and a closed position. This is particularly true when the umbrella is mounted in the center of a table or upon a pedestal. Accordingly, various types of mechanical advantage devices have been proposed to facilitate the opening and closing of such umbrellas. These devices sometimes require the use of a flexible cable that is trained about various pulleys to effect the mechanical advantage required to raise the canopy against the resistance of the framework. Other types of garden umbrellas also employ hinged joints between various sections of the support pole so that the umbrella may be tilted to more effectively block the rays of the sun. It has been found that the use of such joints on those umbrellas employing flexible cable mechanical advantage devices is not completely satisfactory in that the tilting of the umbrella imposes tensile stresses on the cable that either snap the cable or distort parts of the umbrella structure. Accordingly, an object of this invention is to provide a hinged joint connection for umbrella support poles employing flexible cable canopy operating devices that is simple in construction, efficient in operation, and which will overcome the aforementioned difficulties.

Another object of this invention is to provide a garden umbrella having mechanical advantage means for raising and lowering the canopy, and having a support therefor that is hinged to permit angular adjustment of the canopy relative to the support.

A still further object of the present invention is to provide a hinged joint for pivotally connecting the upper and lower support members of a garden umbrella that is selectively adjustable between various positions on each side of the vertical axis thereof.

A more specific object of this invention is to provide an adjustable hinged joint for use in connection with support poles of garden type umbrellas, wherein the joint has provision for the passage of a flexible cable there-through in both directions for operative engagement with flexible cable mechanical operating devices for selectively opening and closing the umbrella canopy in any adjusted position thereof.

All of the foregoing and still further objects and advantages of this invention will become apparent from a study of the following specification, taken in connection with the accompanying drawing, wherein:

Fig. 1 is a front elevational view of a garden umbrella, with the canopy cover removed, and with the canopy and pole in a plurality of adjusted positions.

Figs. 2 and 3 are diagrammatic front and side elevational views of a hinged joint made in accordance with the present invention.

Figs. 4 and 5 are bottom and top elevational views, respectively, of the hinged joint shown in Figs. 2 and 3.

Figs. 6 and 7 are rear elevational views of the joint

2

shown in Fig. 2, in a vertical and an inclined position, respectively.

Figs. 8 and 9 are views similar to Figs. 6 and 7, showing a flexible cable in association with the joint.

Figs. 10, 11, and 12 are front, bottom, and top elevational views, respectively, of the lower member of the joint shown in Fig. 2.

Figs. 13, 14, and 15 are front, bottom, and top elevational views, respectively, of the upper member of the joint shown in Fig. 2.

Figs. 16 and 17 are opposite side elevational views of the member shown in Fig. 13.

Figs. 18 and 19 are cross-sectional views taken along line 18—18 and line 19—19, respectively, of Fig. 10.

Fig. 20 is a front elevational view, with parts removed, of the assembled hinged joint in an adjusted position as shown in Fig. 7.

Fig. 21 is a longitudinal sectional view taken on line 21—21 of Fig. 3.

Referring now to Fig. 1 of the drawing, an umbrella of the type embodying the present invention is shown to include a collapsible canopy (with cover removed) in operative association with a supporting pole. The canopy frame 25 includes a plurality of radially outwardly extending ribs 26 that are pivotally secured at their upper end to the crown 27 at the upper extremity of the upper portion 28 of the support pole. A stretcher or brace member 29 is pivoted to the central portion of each rib 26 at one end and is pivotally connected at its opposite end to a vertically slidable runner 30. By moving the runner 30 from a lowered position to a raised position, the canopy may be opened. The upward movement of the slider 30 is limited by a fixed stop 32. By depressing the spring or retractable stop 33, the slider may be returned to a lowered position to collapse the canopy.

The upper pole member 28 is hingedly connected to the lower pole member 35 by means of a hinged joint device 36, that is hereinafter more fully described. The lower extremity of the pole 35 may be releasably connected, such as by a coupling 40, to a support shaft that is provided with a point 37 to facilitate the entry thereof into sod, sand, and the like. The raising and lowering of the canopy is effected by means of a flexible cable 39 that is actuated by a mechanical advantage device, which may be of a ratchet, friction, or gear type drive. As is diagrammatically shown, the cable is extended through the hinged joint 36 and about various pulleys and into engagement with the slider or runner 30, whereby force may be transmitted from the mechanical advantage device through the cable to selectively move the canopy between an open and closed position.

Referring now to Figs. 2 to 9, the hinged joint 36 is shown to include pivotally connected upper and lower members 44, 45, respectively. These members are preferably constructed of a stainless and corrosive-proof material, such as aluminum or stainless steel, to prevent the parts from sticking or becoming difficult to operate because of rust or corrosion. The upper member 44 is provided with an extension 46 of circular cross-section that is adapted to be inserted in a press fit relationship within the lower extremity of the upper pole member 28. Similarly, the lower member 45 is provided with a circular extension 47 of slightly smaller diameter than the lower member and is adapted to be inserted, in press fit engagement, with the upper end of the lower pole 35.

Referring now to Figs. 10 to 20, the interior construction of the respective members is more clearly shown, wherein a downwardly extending and centrally disposed tongue 50 on the upper member 44 is adapted to be rotatably engaged between the parallel legs 51, 52, of the bifurcated lower member 45. A pivot pin 54 extends through aligned openings in the bifurcated leg por-

tions and a bore 55 in the tongue to rotatably secure the upper and lower members together. One side 56 of the tongue is in facing engagement with one leg 52 of the lower member and the other side 57 of the tongue is in facing engagement with the opposite leg 51. The side 57 facing the opposite leg 51 is provided with a plurality of radially extending grooves 60, 61, 62, that converge towards the axis of the pivot pin 54 that extends through the bore 55 in the tongue and aligned bores 64, 65, in the legs of the lower member.

As is more clearly shown in Figs. 10 and 19, one leg 51 of the lower member is provided with a transversely extending and vertically arranged rectangular bore 67, while the inner side of the other leg 52 is provided with a smaller bore 68 that communicates with an enlarged counterbore 69 on the outside thereof. A transversely slidable latch 70 is provided with a locking member 72 of substantially the same size as the rectangular bore 67 and an integral plunger 71 of a size corresponding to the smaller bore 68 in the opposite leg 52. The latch is assembled in the lower member 45 with the locking member 72 slidably disposed within the rectangular bore 67 so that a portion thereof extends into the opening between the bifurcated legs. The plunger 71 extends through the smaller bore and into the space defined by the counterbore 69 and the outer end thereof is integrally connected to a pushbutton 74. A compression spring 75 acting between the pushbutton 74 and the inner member of the counterbore 69 normally urges the locking member 72 of the latch into the position shown in Fig. 10, wherein it extends into the space between the bifurcated legs. By depressing the pushbutton 74, the locking member 72 is moved towards a retracted position relative to this space.

With the upper and lower members in an assembled relationship, as shown in Fig. 20, the locking member 72 is arranged to engage with each of the radially extending grooves 60, 61, 62, in the tongue 50 of the upper member, so as to lock the parts against rotation in any one of the desired positions allotted by the grooves. Both side walls of the central groove 61 are substantially parallel to the locking member 72 so that rotation of the members out of an aligned position in either direction is prevented until the button 74 is depressed to move the locking member 72 out of engagement therewith. By depressing the button 74 the upper member 44 may be rotated in either direction relative to the lower member 45 until either shoulder 76, 79, adjacent to the side slots 60, 62, respectively, engages with the upstanding portion of the latch member 70, as more clearly shown in Figs. 18 and 20. In either extreme position, release of the pushbutton 74, is operative to effect the engagement of the locking member 72 with the respective side slot. The inwardly disposed side walls 77, 78, of the side slots are inclined, as shown in Figs. 14 and 17, so that the upper member may be returned to a vertical position merely by rotation thereof, without requiring the pushbutton 74 to be depressed. The locking member 72 is depressed automatically by the follower action of the adjacent edge 73 of the locking member on the inclined, cam-like surfaces until the central position is reached. The locking member 72 then drops into the central groove 61, thereby locking the members in the aligned position until being released therefrom by pressing the pushbutton 74.

One leg 51 of the bifurcated member is provided with an isolated longitudinal bore 80 that is spaced from the transverse pin-receiving bore 64 and rectangular opening 67, as shown in Fig. 19. This bore communicates at its lower end with the interior of the lower extension 47 and at its upper end with a flared cutout 81 that opens outwardly at the top of the leg. The base of the upper member 44 is also provided with an elongated slot 83 along the side 57 of the tongue 50 that is adjacent to the leg 51 in the lower member having the flared opening 81. This slot is of a length substantially equal to the length of the flared opening 81 in the lower member and communicates therewith at one side and, at the other side,

opens into the upper tubular extension 46. The length of the respective adjacent openings 81, 83, is sufficient to permit communication therebetween in any of the provided angular relationships of the upper and lower members so that the cable 39 may be trained therethrough and not sheared by the rotation between the two main members. The longitudinal bore 80 carries the cable 39 around the pivot member 54, out of engagement with any of the moving parts, and only slightly spaced from the axis of rotation thereof. It will thus be recognized that the effective length of the cable 39 is not materially affected by the rotation of the parts, as is more clearly shown in Figs. 8 and 9. In tilting the parts from a vertical position to the inclined position shown in Fig. 8, the cable is guided about one side of the flared opening 81; and in the position shown in Fig. 9, the cable is guided about the pivot 54.

All of the abutting surfaces of the upper and lower members are formed along the arc of a circle having its center coincident with the longitudinal axis of the pivot 54. Thus, the lower extremity of the tongue 50 presents a surface that is concentric with the upwardly facing surface on the lower member between the upstanding legs 51, 52. Also, the upper extremities of the legs 51, 52, of the bifurcated member define arcuate surfaces that are concentric with the downwardly facing surfaces at each side on the tongue 50 on the upper member. This relationship maintains the parts in close fit relationship with each other and prevents the entry of foreign objects or fingers of an operator which otherwise could become jammed therein. This also prevents the admission of foreign matter, moisture, and the like into the respective housings and tubular pole members which might otherwise damage the umbrella structure or the operating cable 39.

Referring again to Fig. 1, the hinged joint 36 is shown in operative connection between the upper pole 28 and the lower pole 35 and may be used to tilt the umbrella canopy 25 from a vertical position shown in broken lines to an inclined position shown in full lines in either direction by depressing the operating button 75. The return of the canopy from the tilted position 28a to the vertical position may be effected merely by rotating the upper pole member 28 until the locking member 72 snaps into position within the side walls of the central groove 61, thereby locking it in this position.

While this invention has been described with particular reference to the specific form shown in the drawing, it is to be understood that such is not to be construed as imparting limitations upon the invention, which is best defined by the claims appended hereto.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a collapsible canopy having a sectional support pole, and a flexible cable operator means for moving said canopy between an open and a closed position; a hinged joint for pivotally connecting the sections of said support pole comprising, in combination, an upper and lower member pivotally connected at their inner extremities for relative angular rotation in a single plane, the outer extremities of each of said members having means for integrally engaging with a support pole section, one of said members having a projecting tongue and the other having a pair of legs between which the tongue is pivotally secured, latch means for lockingly securing the tongue and the legs in a plurality of adjusted angularly related positions and each of said members having a longitudinal flexible cable receiving bore extending therethrough, but isolated from the pivot means and from moving parts of the latch means the inner extremities of said bores communicating with each other in all of said adjusted relative positions of said members.

2. A hinged joint for garden umbrellas having a sectional support pole and a flexible cable operator means for selectively moving the umbrella canopy between an

open and a closed position comprising, in combination, a pair of relatively adjustable members having common pivot means connecting the inner extremities thereof said members being relatively movable in a single plane in two opposite directions from an axially aligned position independently of the means for moving the canopy to open or closed position, the outer extremity of each of said members having means for integrally connecting with a separate support pole section, one of said members having a releasable lock member for selectively maintaining said members in an adjusted relative angular position, one of said members including a longitudinal bore extending therethrough adjacent to but isolated from said common pivot means for guiding a flexible cable therethrough between the adjacent pole sections, and the other of said members having an opening extending therethrough and communicating with said longitudinal bore.

3. A hinged joint for garden umbrellas having a sectional support pole and a flexible cable operator means for selectively moving the umbrella canopy between an open and a closed position said hinged joint comprising, in combination, a pair of pivotally adjustable members having common pivot means connecting the inner extremities thereof for relative rotation in a single plane, in two directions from an axially aligned locked position the outer extremities of each of said members having means for integrally connecting with a separate support pole section, one of said members having a plurality of stops extending in a direction radially of said pivot means, the other of said members having a locking member slidable in a direction parallel to the axis of rotation of said pivot means for selectively engaging with said stops to maintain said members in an adjusted angular relationship, one of said members including a longitudinal bore extending therethrough adjacent to but isolated therefrom said common pivot means for guiding a flexible cable therethrough, and the other of said members having an opening extending therethrough and communicating with said longitudinal bore.

4. A hinged joint as set forth in claim 3, wherein said longitudinal bore is isolated from said stops and said locking member.

5. A hinged joint as set forth in claim 3, wherein one member comprises a centrally disposed tongue and said other of said members is bifurcated and comprises a pair of spaced parallel legs for rotatably receiving said tongue therebetween.

6. A hinged joint as set forth in claim 5, wherein said stops are disposed on one side of said tongue in facing engagement with the inside of one of said legs, and said locking member is retractably disposed within said one of said legs for slidable movement between an engaged and disengaged position with said stops.

7. In a collapsible canopy having a sectional support pole and a flexible cable operator means for moving said canopy between an open and a closed position; a hinged joint for pivotally connecting the sections of said support pole comprising in combination a first member and a second member, each of which has an outwardly extending and an inwardly extending portion, the outwardly extending portion of each said member having means for integrally engaging with a section of said support pole, the inwardly extending portion of said first member constituting a longitudinally extending centrally disposed tongue having two flat faces and terminating in an arcuate end, the juncture of the tongue with the member defining an arcuate shoulder for cooperative relation with the inwardly extending portion of the second member, one of said faces having a plurality of radially extending grooves, the sides of which constitute stops, the center groove having two perpendicular sides to receive a locking bolt and maintain the members in axial alignment, the other grooves each having a perpendicular side wall on the side remote from the center groove, and the other side wall beveled from the bottom of the groove toward the center groove to serve as a cam surface to retract the lock bolt when said members are moved from any angular relation to the aligned relation, the inwardly extending portion of said second member being bifurcated and comprising a pair of spaced parallel legs between which is nicely rotatably received said tongue, the bottom of said bifurcation being arcuately concentric with the arcuate end of said tongue, and the free ends of said legs being arcuate concentrically with the arcuate shoulders on said first member, a pivot pin extending through said legs and said tongue, the center of said pivot being the center of all said arcuate parts, a spring-projected locking bolt carried by one of said legs and slidable in a direction parallel to the axis of rotation of said pivot means for selectively engaging with said stops to maintain said members and hence said pole sections in adjusted angular relationship, each of said members having a longitudinal flexible-cable-receiving and guiding bore extending therethrough, but isolated from the pivot means and from all moving parts of the locking means, the inner extremities of said bores communicating with each other in all of said adjusted relative positions of said members, said bores having flared ends where they confront each other, and the cooperating arcuate surfaces being closely adjacent whereby the said members may be angularly related and adjusted without any strain being placed upon the flexible cable.

References Cited in the file of this patent

UNITED STATES PATENTS

2,721,569 Militano ----- Oct. 25, 1955