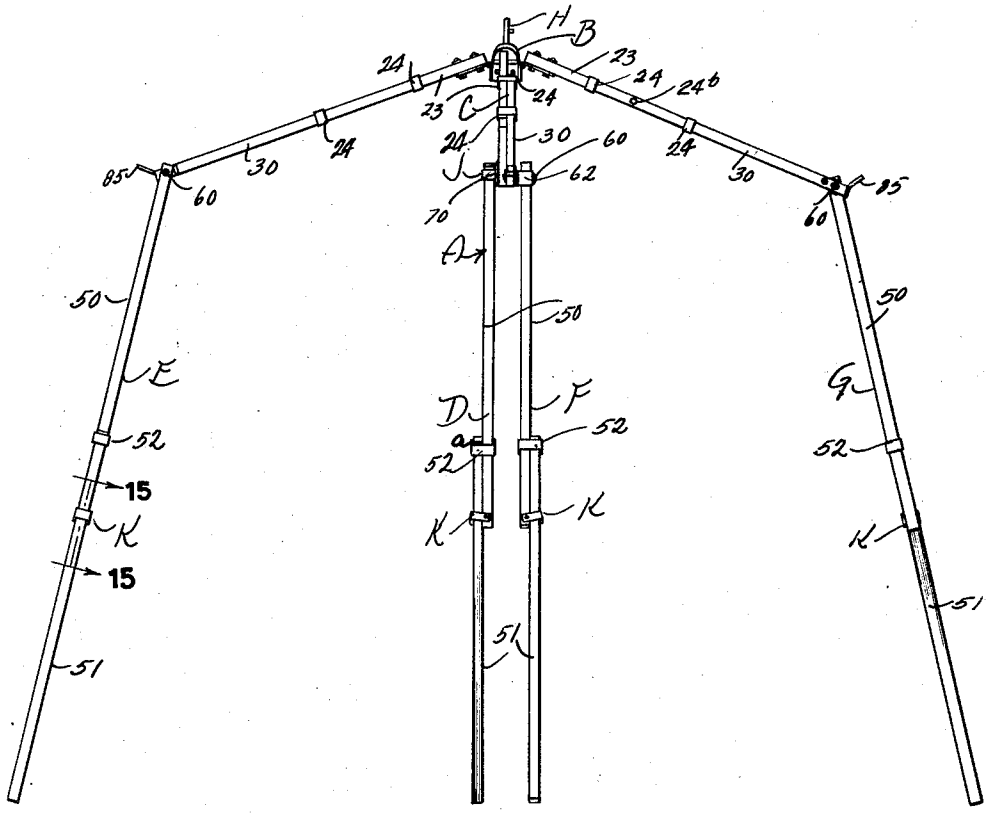
May 29, 1951 J. R. BROWN 2,555,220

TENT FRAME CONSTRUCTION

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FIG. 1.



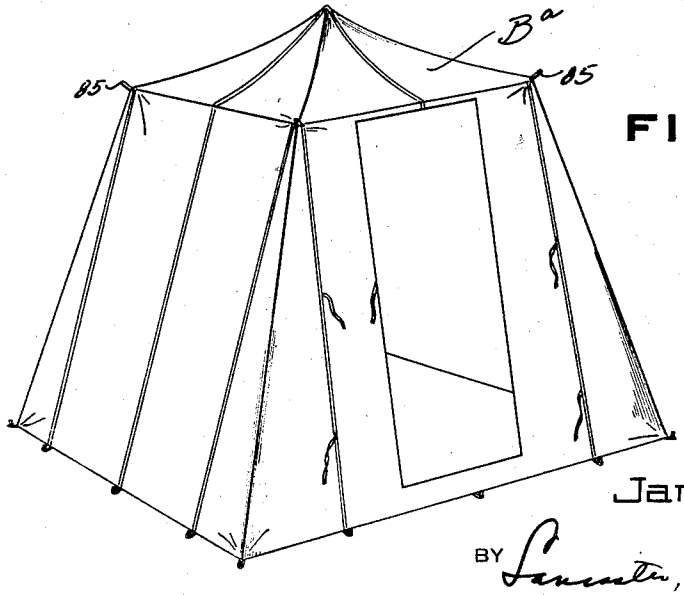


FIG. 2.

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TENT FRAME CONSTRUCTION

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FIG. 3.

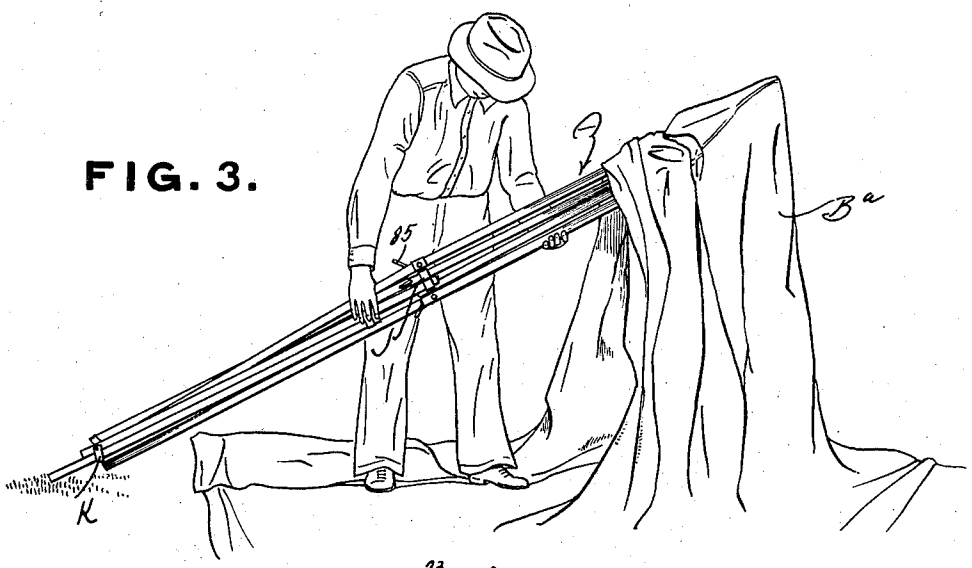
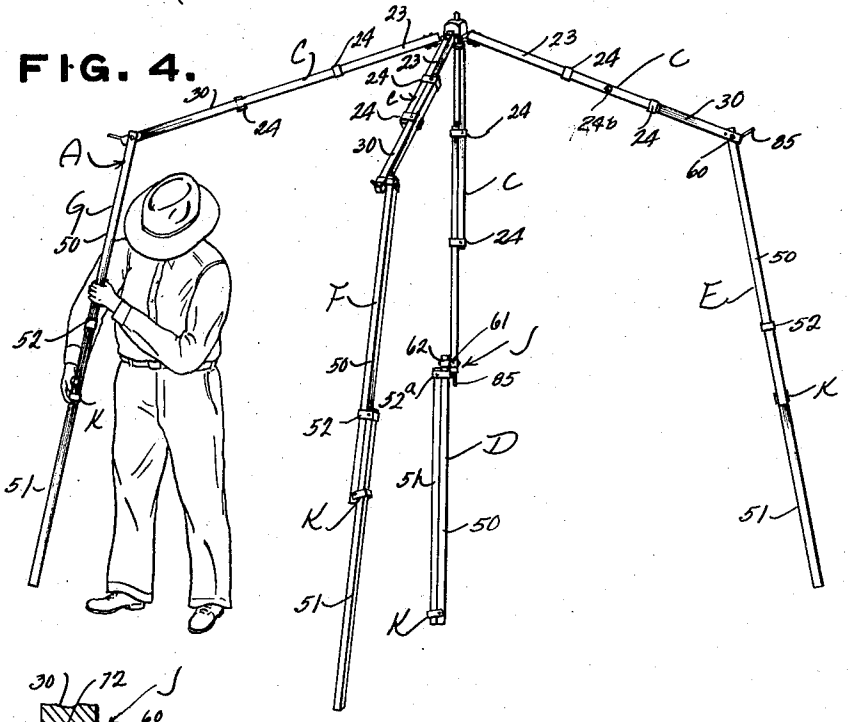


FIG. 4.



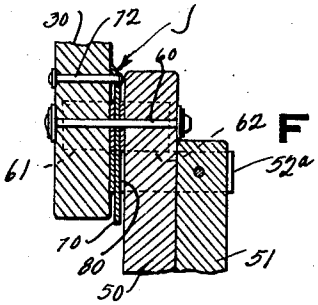


FIG. 5.

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TENT FRAME CONSTRUCTION

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FIG. 6.

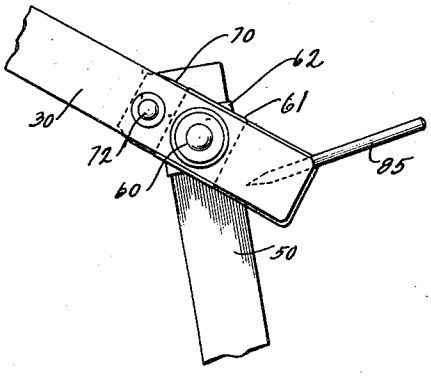


FIG. 7.

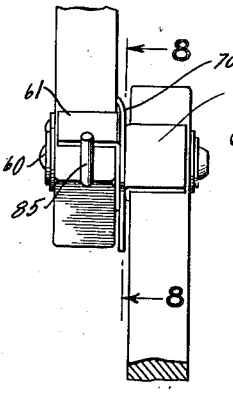


FIG. 8.

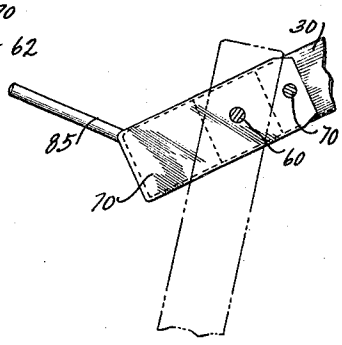


FIG. 9.

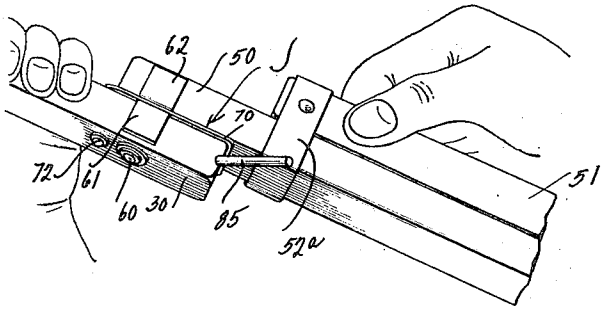


FIG. 10.

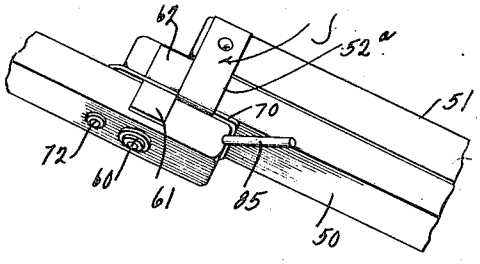
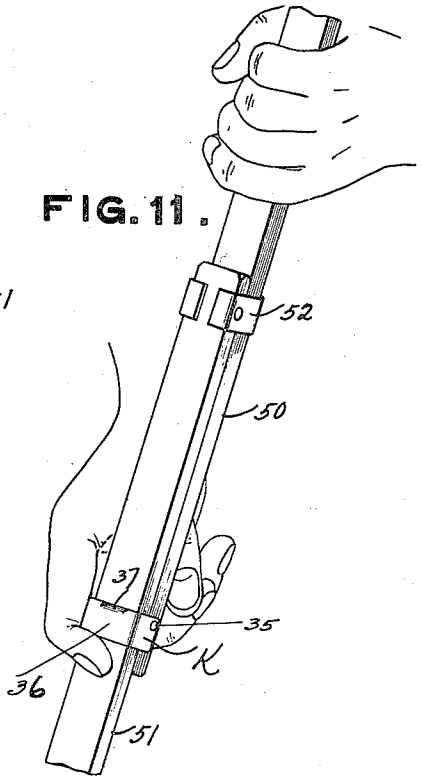


FIG. 11.



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TENT FRAME CONSTRUCTION

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FIG. 12.

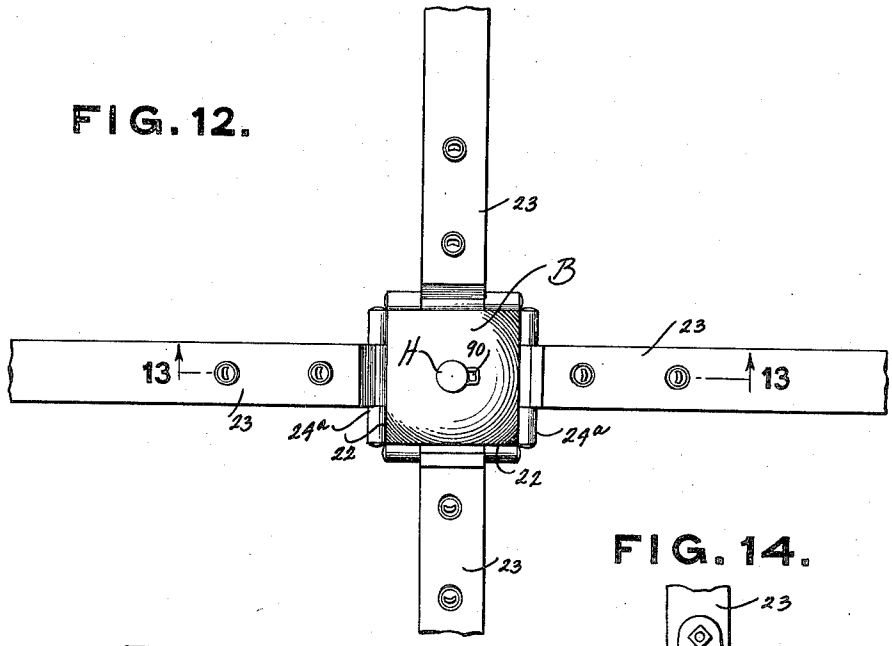


FIG. 13.

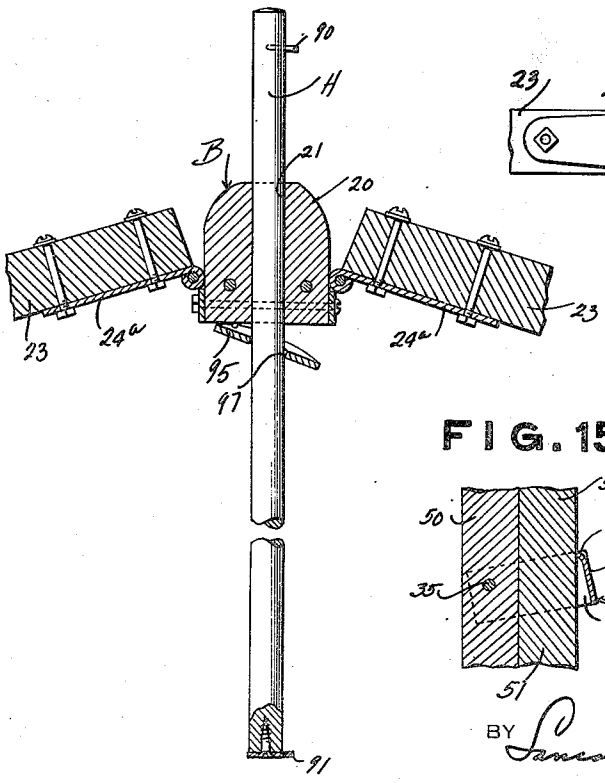


FIG. 14.

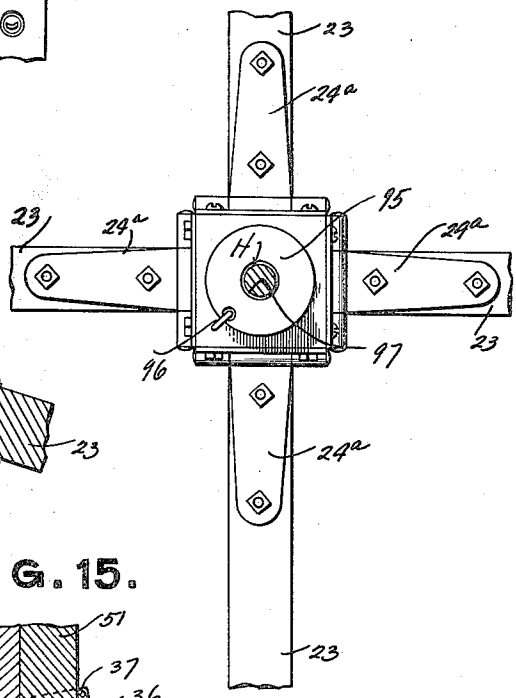


FIG. 15.

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UNITED STATES PATENT OFFICE

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TENT FRAME CONSTRUCTION

James R. Brown, Salinas, Calif.

Application February 27, 1948, Serial No. 11,362

8 Claims. (Cl. 135—4)

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This invention relates to improvements in tent structures.

The primary object of this invention is the provision of an improved frame for umbrella type tents which can be manipulated with facility by a single operator to set up the tent in an appreciably shorter time than can be accomplished with conventional umbrella type tent frames.

A further object of this invention is the provision of a unitary frame assemblage for umbrella type tents wherein all parts of the frame structure are connected together, not only when in extended position, but also when collapsed.

Other objects and advantages of this invention will be apparent during the course of the following detailed description.

In the accompanying drawings, forming a part of this specification, and wherein similar reference characters designate corresponding parts thruout the several views:

Figure 1 is an elevation taken from a corner of the tent frame showing the latter in "setup" position.

Figure 2 is a perspective view of the type of tent with which the frame is intended to be used; the canopy being shown in "setup" position.

Figure 3 is a perspective view showing the collapsed tent frame in a position to facilitate erection of the frame and canopy simultaneously.

Figure 4 is a view, partly in perspective, showing an improved pilot leg construction used as part of the framework, in position for holding the framework so that the operator with facility can individually set up the roof bracing and legs.

Figure 5 is a transverse cross-sectional view taken thru the pilot leg combination joint and lock construction.

Figure 6 is a side elevation showing portions of the pilot leg construction at the combination joint and lock structure when the frame is in "setup" position.

Figure 7 is an edge elevation of the parts as shown in Figure 6.

Figure 8 is a cross-sectional view taken substantially on the line 8—8 of Figure 7.

Figure 9 is a perspective view showing a step in the assemblage of the joint and lock construction J preliminary to establishing rigidity of the pilot leg construction.

Figure 10 is a perspective view of the parts shown in Figure 9 but with the joint structure in locked position.

Figure 11 is a perspective view showing the manner in which the complementary sections of a brace or leg portion of the tent frame may be locked in a desired adjustment without the necessity of turning clamping screws, etc.

Figure 12 is a top plan view of the hub and roofing structure of the frame.

Figure 13 is a cross-sectional view taken thru

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the details of Figure 12 substantially on the line 13—13 of Figure 12.

Figure 14 is a bottom plan view of the parts shown in Figure 12.

Figure 15 is a cross-sectional view taken thru an improved locking member which establishes the length of a brace or leg construction.

In the drawings, wherein for the purpose of illustration is shown only a preferred embodiment of the invention, the letter A may generally designate a unitary frame construction adapted to support an umbrella type canopy B^a.

The improved frame construction A preferably consists of a hub portion B to which are radially connected spider-like roof braces C. The latter at their outer ends are pivotally connected to extensible legs D, E, F and G. The leg D and the associated roof brace C are utilized in connection with an improved combination joint and lock construction J to form a pilot leg structure which, as such, is utilized initially in holding the framework in position while the various other legs and roof brace structures are extended beneath the canopy into position for supporting the canopy.

In connection with each roof brace C and also each leg D, E, F and G, I may utilize improved length holding detents K (shown in Figure 15) which acts as a lock to prevent shortening or collapse of the complementary brace and leg parts, as the case may be, when extended into position for supporting the canopy.

The hub B is of polygonal construction including a dome-shaped top surface 20. It has a passageway 21 therethru for slidably receiving the normally vertically positioned canopy roof stretching pole or member H. In a conventionally sized umbrella type tent, the hub B will be provided with four flat sides 22 in adjacent right-angled relation to one another to which the inner lengths 23 of the spider or roof brace portions C are connected by hinges 24^a attached to the under sides of the lengths 23 whereby when the frame is erected the ends of the latter may abut against the flat surfaces 22 should there be a tendency of the frame to collapse, in order to limit the dropping action. This enables the portions 23 to be collapsed parallel with the roof stretching member H or extended at an acute angle thereto varying between a right angle and the parallel position mentioned.

Each roof brace structure C further includes an outer length 30 slidably connected to the inner length 23 in parallel relation thereto by means of two metal bands 24 pivoted thereto. One of them may have a set screw 24^b to hold the sections in place. The outer lock clamp and guide K is of the construction shown in Figure 15. Each of these detent type lock clamps K is of U-shaped construction and has a pair of

leg portions thereof pivotally connected by a pin 35 to one of the lengths of the brace or leg structure, as the case may be. The leg connecting portion 36 of the detent K is provided with a tooth flange 37 bent inwardly towards the pivot pin which may be sharpened at a chisel edge for the purpose of biting into the material of the length which is slidably extended thru the passageway 38. Merely by tilting the detent K upon the pivot pin 35 will insure the biting of the toothed flange 37 into the material of the length which is slidable thru the passageway 38 and this will hold the length extension of the parts. The detent K, shown in Figure 15, holds complementary portions of a leg structure together.

Each of the leg structures D, E, F and G includes an upper portion 50 and a lower portion 51 slidably connected in parallel for collapsible and extensible positioning. Means for holding them in this slidable relation consists of a metal strap portion 52 fixedly secured to the upper end of each of the lower leg lengths 51, having a passageway therethru for snugly slidably receiving the other leg section 50. The latter at its lower end has pivotally connected therewith one of the locking detents K, the operation of which is shown in Figure 15 and has been above described. Its purpose is to hold the locked extension of the leg parts 50 and 51.

The outer end of each portion 30 is pivotally connected to the upper end of each upper section 50 of the leg structure by means of a pivot pin 60. At this location the wear surfaces of the ends of the portions 30 and 50 may be reinforced by means of U-shaped metal straps, such as the straps 61 and 62 shown in the drawings in connection with illustration of the pilot leg joint structure J.

Referring to the joint structure J, the same in addition to the straps 61 and 62 is provided with a metal locking tongue 70 having the pivot pin 60 extended therethru. It lies between the straps 61 and 62 and extends along the outer portion 30 of one roof spider; its inner end being secured by a pin 72 to the roof brace portion 30. The outer end of the tongue 70 extends beyond the strap portions 61 and 62, as shown in Figure 5, in spaced relation with the facing surfaces of the portions 30 and 50 beyond the straps 61 and 62. Whereas the straps 52 of the leg portions E, F and G snugly slidably receive the upper leg portion 50 therethru, the strap portion 52^a forming part of the joint structure J, is extended to provide a socket 80 for receiving the tongue 70 whereby the portions 30 and 50 of the roof brace and leg structure of the pilot leg may be locked together in extended alignment as shown in Figures 4 and 10 of the drawings.

The outer end of each roof brace portion is provided with a canopy grommet attaching pin 85.

The canopy stretcher pole or member H is slidably extended thru the passageway 21 of the hub structure B and at its ends may be provided with stop parts 90 and 91, such as shown in Figures 12 and 13 of the drawings, prevent detachment of member H from the hub structure. The top surface of hub B may be rounded since it is intended to engage with the center of the roof structure of the canopy B^a in order to stretch the canopy top into position. To hold the extended position of the roof stretcher pole H, I provide a locking washer 95 which may be loosely pivoted at 96, as shown in Figure 14, to

the under flat surface of the hub B. This washer has an opening 97 therein which freely slidably receives the stretcher pole H, as shown in Figures 13 and 14. Since the locking washer 95 is pivoted on the under surface of the hub B it will normally drop to a slanted position, as shown in Figure 13. The edge surrounding the opening 97 will bite into the material of the stretcher pole H and hold the extended position of the latter. The pole H may be pushed upwardly to stretch the roof of the canopy to any desired extent between the limits of the stops 90 and 91, and the locking washer will always drop into position to automatically hold the locked extension of the stretcher pole.

Referring to the mode of assemblage of the framework and tent canopy, it will be noted that since the extensible portions of the complementary pivotally connected roof braces and legs are offset from opposite sides, the complementary sections of the legs when collapsed to the same length as the complementary sections of the roof brace C, may be collapsed parallel and swung downwardly into parallelism with the stretcher pole H. Thus the overall length of the collapsed frame assemblage is of substantially the same length as one of the leg portions 50. From this collapsed position the first step is to assemble the pilot leg structure D so that the leg portions 50 and 51 are extended in line with the roof brace structure C to which it is pivotally connected. The leg portions 50 and 51 of the pilot leg section are, of course, locked in the position shown in Figure 4 as an initial step. The straightening of the portions D and C into alignment will leave the parts as shown in Figure 9, since the end of the locking tongue must be removed from its socket passageway of the strap 52^a in order to permit this alignment. Thereafter, the portion 51 is moved by the operator, from the position of Figure 9, until the locking clamp 52^a engages the outer end of the locking tongue and this will lock the parts in position, as shown in Figure 10. The hub B of the frame structure A (with all legs and parts C extended) is then slipped into the canopy structure B^a, as shown in Figure 3, with the hub at the top center of the canopy and the tent is then raised to an upright position. Since the pilot leg (parts D and C) are vertically positioned to hold the hub in proper position, the operator is then free to go from leg E to leg F to leg G, slipping the pins 85 into the corner grommets of the tent canopy; the portions 50 and 51 being adjusted as to length in the mode above described. After the legs E, F and G have thus been set, the detent K for the pilot leg is released so that the portion 50 may be moved outwardly to release the strap 52^a from the locking tongue. This will then permit the brace C of the pilot leg construction to be swung upwardly to the spider position of the other leg structures and the leg portions 50 and 51 of the pilot leg construction may be extended in the manner above described. It is, of course, assumed that the corner stakes have previously been positioned to hold the corners of the canopy B. The stretcher pole is then pushed upwardly to engage the center of the canopy roof structure and this tightens the roof structure. Of course the stretcher pole will hold the position by reason of the locking washer above described.

It is not necessary to make the roof spider portions C extensible since they may be made of a single length, altho by making them ex-

tensible the framework may be utilized in connection with umbrella tents of various sizes.

To release the stretcher pole it is merely necessary to push up on the down side of the locking washer, and to release the leg locks or detents K it is merely necessary to lift the upper part of the leg and pull down on the lower after loosening the detent.

In order to take down the tent frame in an orderly manner the stretcher pole is released or collapsed and then the pilot leg structure D is vertically positioned as shown in Figure 4. The other legs may then be collapsed and subsequently the pilot leg.

In the conventional tent frame structure for umbrella tents there are seven separate pieces. The difficulty of handling these in the erection of the canopy is well known to those who have ever tried to erect an umbrella type tent. With the improved unitary frame assemblage of this invention, it is possible to erect the umbrella type canopy into complete assembled tent positioning within from 1/7 to 1/10 the time that a single man can erect a conventional umbrella tent structure.

It will be noted that the frame structure when erected does not have a center pole to obstruct the tent compartment.

Various changes in the shape, size and arrangement of parts may be made to the form of the invention herein shown and described without departing from the spirit of the invention or the scope of the following claims.

I claim:

1. In a tent construction the combination of a hub portion having a plurality of elongated roof braces pivotally connected around the same for extension radially therefrom or into collapsed parallel relation therewith, a plurality of legs pivotally connected with the outer ends of the roof braces, means to releasably connect at least one of the legs and its complementary roof brace in rigid extended substantially aligned positioning, and a tent roof stretching member connected to said hub for free longitudinal sliding therethru.

2. In a tent construction the combination of a hub portion having a plurality of elongated roof braces pivotally connected around the same for extension radially therefrom or into collapsed parallel relation therewith, a plurality of legs pivotally connected with the outer ends of the roof braces, means to releasably connect at least one of the legs and its complementary roof brace in rigid extended aligned positioning, a tent roof stretching member connected to said hub for free longitudinal sliding therethru, and automatic locking means to hold the roof stretching extension of said member with respect to the hub.

3. In a unitary frame structure for umbrella type tents the combination of a hub, a plurality of roof braces each comprising complementary extensible sections, means collapsibly connecting a section of each brace to the hub, a plurality of legs each comprising extensible sections, means to collapsibly lock the respective sections of the roof braces and legs in desired extension, a tent roof stretching member axially carried by said hub for slidable extension therefrom, and means to automatically lock the stretcher member in upward extended position against dropping when movably pushed upward.

4. In a frame structure for tents the combination of a plurality of roof braces, a leg structure pivotally connected to each of the roof braces, and means to connect at least one of the roof braces with its complementary pivotally connected leg in a releasable straightened extended rigid alingment of said brace and leg, said legs each comprising a plurality of extensible sections.

5. In a frame structure for tents the combination of a plurailty of roof braces, a leg structure pivotally connected to each of the roof braces, and means to releasably connect at least one of the roof braces with its complementary pivotally connected leg in a straightened rigid extended alignment of said brace and leg, said leg structures each comprising a plurality of extensible sections, and said roof braces each comprising a plurality of extensible sections with the inner section portions relatively pivotally connected together.

6. In a tent structure for supporting umbrella type tent canopies the combination of a hub, a canopy roof stretching member movably supported by the hub, a plurality of roof brace portions collapsibly connected to the hub, and a plurality of leg portions movably connected to the outer ends of the braces, at least one of the braces at its outer end having a rigid locking tongue, and a slidable locking member on the leg complementary to the last mentioned brace and movable into position to engage the tongue and hold said roof brace and leg in locked extended alignment.

7. In a tent frame construction for umbrella canopy type tents the combination of a hub portion, a plurality of elongated roof braces pivotally connected to the hub portion in spaced relation around the same for collapsible radial extension therefrom, each of said roof braces comprising inner and outer extensible sections, a plurality of legs pivotally connected with the outer section of each of the roof braces, each leg comprising a pair of longitudinally extensible sections, means to lock the leg sections in a desired extended relation, and means to releasably connect at least one of the legs and its complementary roof brace in rigid extended substantially aligned position to facilitate erection of the frame construction and its canopy.

8. In a framework structure for tents the combination of a hub, roof braces, means to movably connect the roof braces to the hub for collapsed radial extension therefrom, legs, means movably connecting the legs to the outer ends of the braces, and means independent of the last mentioned means to releasably and immovably connect at least one brace and its connected leg in substantially aligned extended relation to facilitate erection of the framework structure.

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