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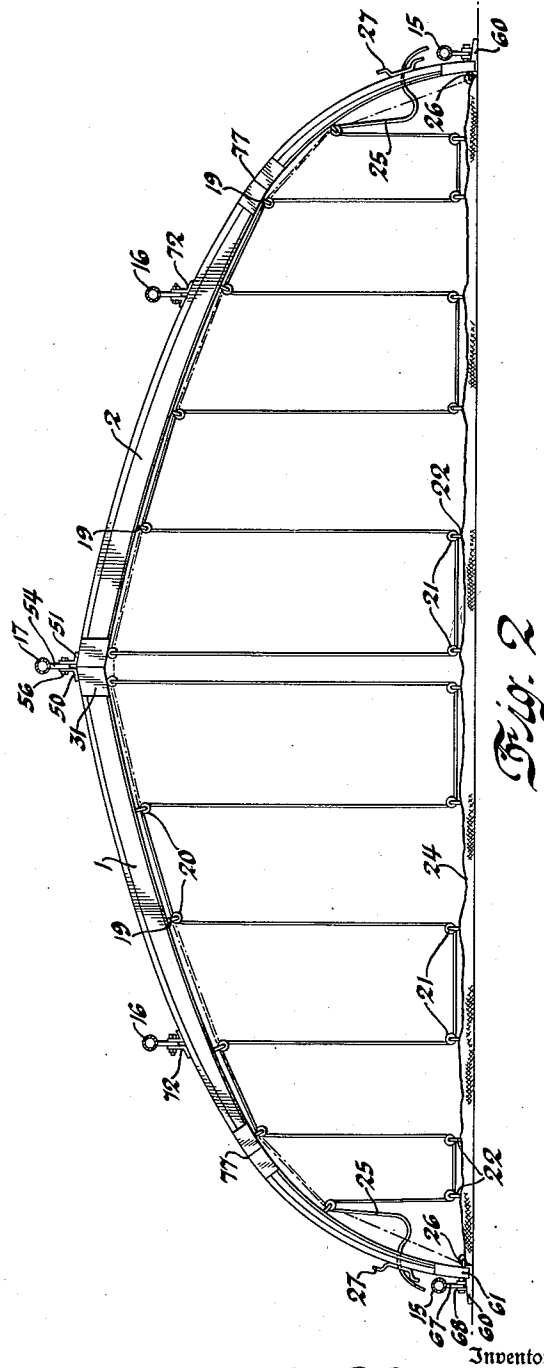
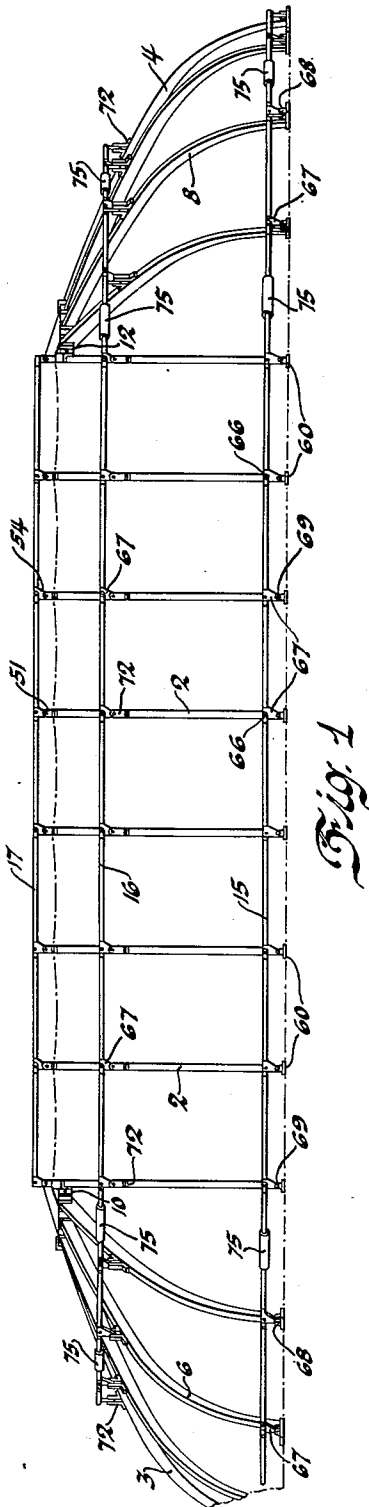
E. R. BROGREN

2,225,972

EXPOSITION TENT

Filed July 2, 1940

4 Sheets-Sheet 1



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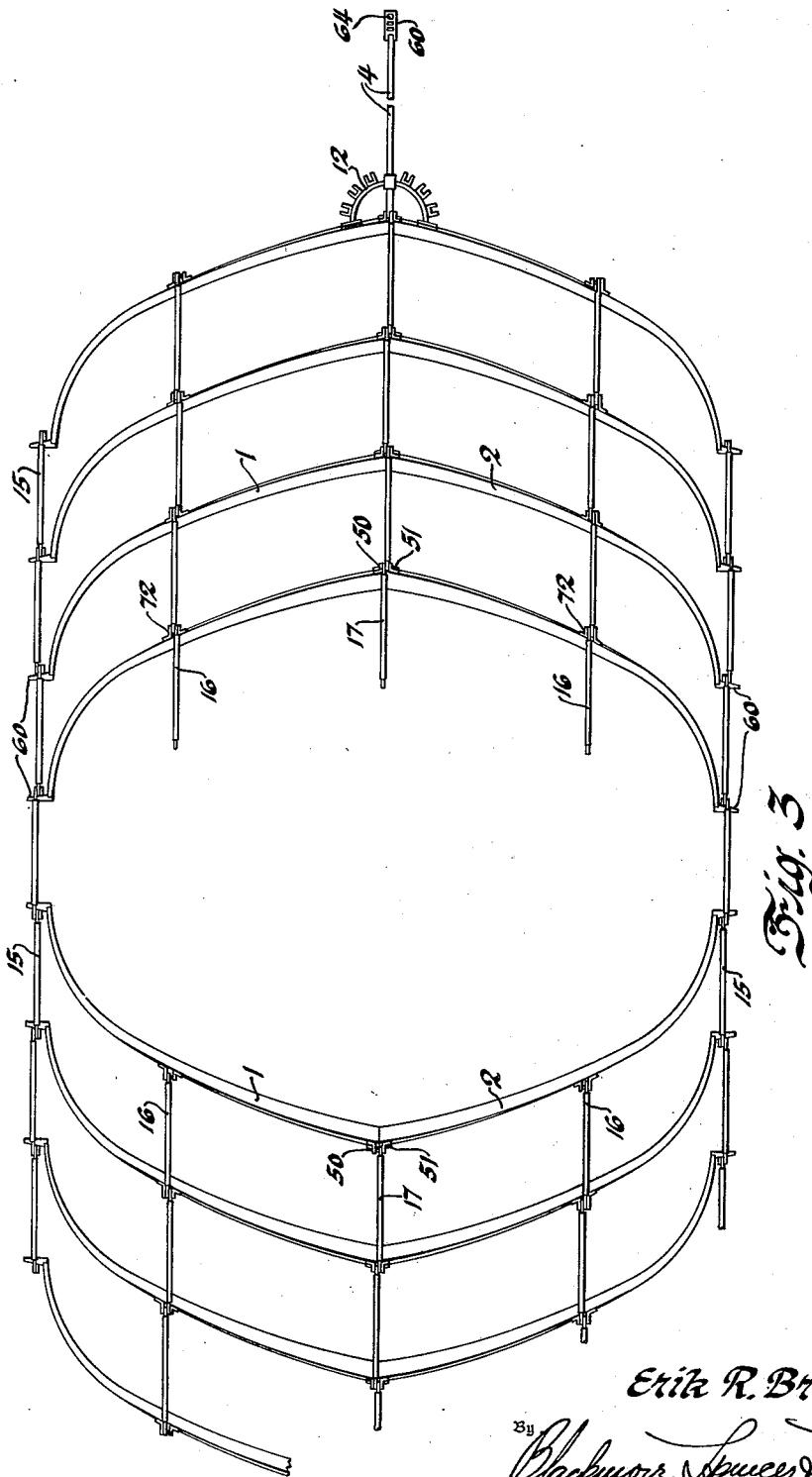
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EXPOSITION TENT

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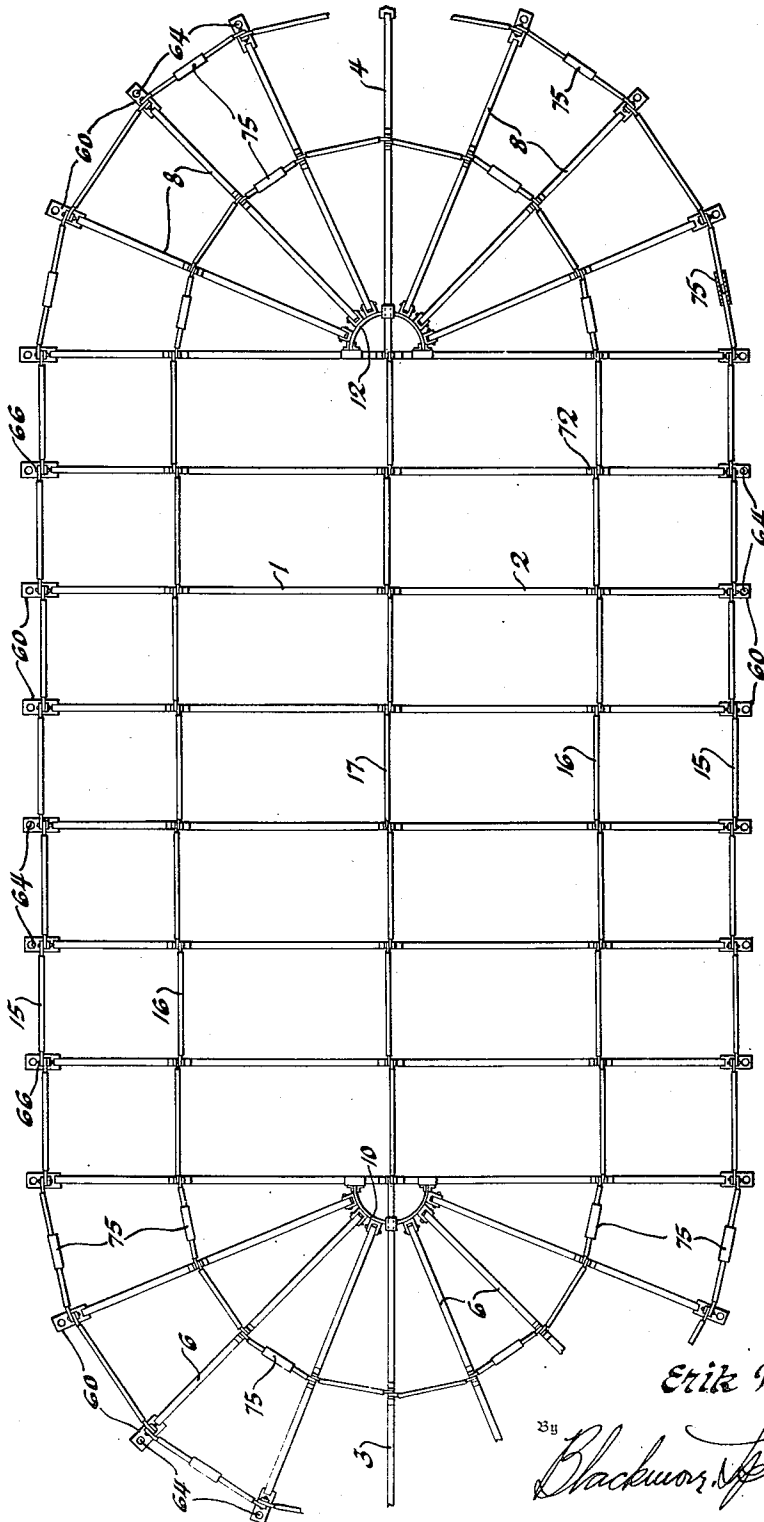


Fig. 4

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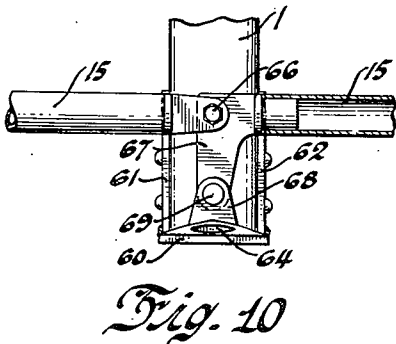
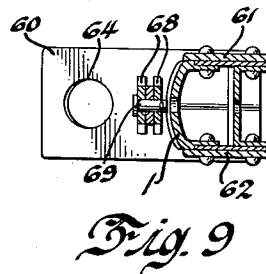
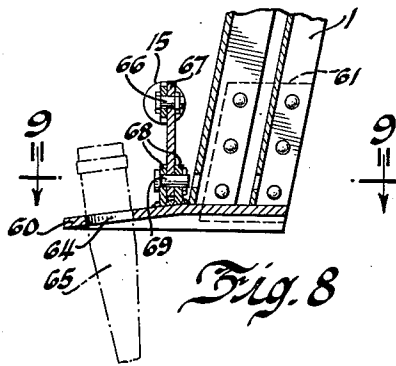
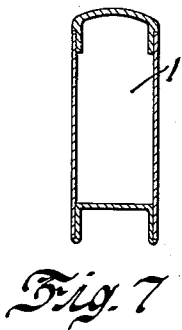
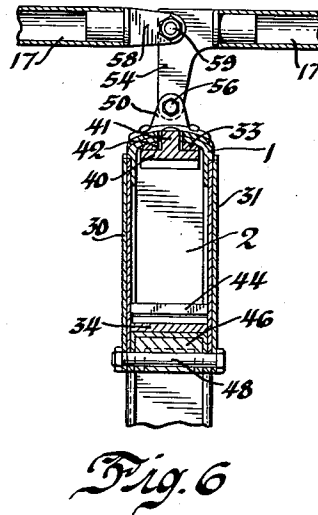
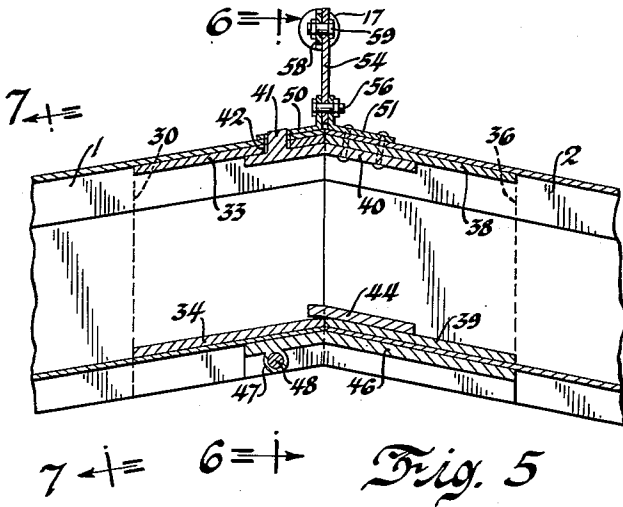
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EXPOSITION TENT

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2,225,972

4 Sheets-Sheet 4



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UNITED STATES PATENT OFFICE

2,225,972

EXPOSITION TENT

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Application July 2, 1940, Serial No. 343,585

8 Claims. (Cl. 135—1)

This invention relates to tents. It relates especially to the construction of a large tent or hangar.

One object of the invention is a tent, the inside and outside of which is free from masts and guy ropes and any obstructions whatsoever.

Another object of the invention is a tent of a kind in which the canvas hangs from an external framework.

A still further object of the invention is a tent which may be quickly assembled and disassembled and easily transported from one place to another.

The above and other objects of the invention will be apparent as the description proceeds.

According to the invention the skeleton framework of the tent consists of a number of pairs of ribs joined together to form transverse arched beam members, which are disposed parallel to one another, with radially disposed end ribs radiating from spiders at the middle of each of the end arched beam members, to form half cupola shaped ends; the area enclosed by the tent which is suspended from the framework being rectangular, with half circular end additions thereto.

The ribs are spaced apart by pivotal links forming a ridge and one or more girts for the skeleton framework.

The drawings show a construction according to the invention.

In the drawings:

Fig. 1 is a view, in longitudinal elevation, of the tent.

Fig. 2 is a view in elevation, of one of the arched beam members showing the canvas of the tent and the rope falls by which the canvas is lifted from the ground and held in position on the underside of the skeleton framework.

Fig. 3 is a plan view of the ribs forming the transverse arched beam members of the mid-portion of the framework in one stage of assembly with the parts flat on the ground.

Fig. 4 is a plan view of the complete skeleton framework in completely assembled and erected condition.

Fig. 5 is an enlarged sectional view of the joint at the top end of two ribs forming a transverse arched beam member.

Fig. 6 is a view on line 6—6 of Fig. 5.

Fig. 7 is a view on line 7—7 of Fig. 5.

Fig. 8 is an enlarged sectional view of the foot of a rib.

Fig. 9 is a view on line 9—9 of Fig. 8.

Fig. 10 is an enlarged elevational view of the parts at the foot of a rib.

The transverse arched beam members are all identical and each consists of two ribs such as 1

and 2 rigidly connected together with a joint at the middle of each transverse arched beam member.

The longitudinally disposed end ribs 3 and 4 are identical and are pivotally connected to the middle of the end transverse arched beam members.

The remaining radially disposed end ribs such as 6 at one end and 8 at the other end, are identical and are pivotally connected to spiders 10 and 12 respectively hinged to the end transverse arched beam members.

The ribs are spaced apart at their feet by links such as 15 forming a girt around the foot of the skeleton framework of the tent, at their middle by links or purlins such as 16 forming another girt, and the transverse arched beam members are spaced at their top by links such as 17 forming a ridge.

The links such as 15, 16 and 17 in each of the girts and the ridge respectively are all pivotally connected together, and each link has one downwardly cranked end which is pivotally connected to a rib of the skeleton framework, in the manner shown most clearly in Figs. 5, 6, 8, 9 and 10 so that all the links are pivotable in vertical planes with reference to the erected framework. As a result, and as shown in Fig. 3, the transverse arched beam members along with the longitudinally disposed end members 3 and 4 may be assembled flat on the ground, with all the links 15 at their feet properly connected; the links 16 and 17 between the transverse arched beam members are all similarly connected, with the exception of those connecting the two middle transverse arched beam members. Then by means of suitable hoisting block and tackle, the two middle transverse arched beam members may be lifted at their middle and drawn together while pivoting about their feet on the ground, along with all the transverse arched beam members on opposite sides thereof, until the middle links 16 and 17 can be properly connected.

When the feet of the longitudinally disposed end members 3 and 4 have been staked to the ground the parts thus far mentioned will be self-supporting in their erected position, and the remaining ribs 6 and 8 may be hoisted into position and pivotally connected to the spiders 10 and 12, the remaining links 15 and 16 being connected, to complete the girts and the whole of the framework with its half cupola shaped ends as shown in Figs. 1 and 4.

Hooked on to eyes 19 on the underside of every rib at suitably spaced intervals, as shown for ex-

ample in Fig. 2, are pulley blocks such as 20, through which, and through pulley blocks such as 21 which are hooked to eyes 22 on the canvas 24 of the tent, ropes or cables such as 25 are reaved.

The canvas 24 is disposed on the ground below the tent framework and its bottom outer edges are hooked to eyes such as 26 at the feet of the ribs, the falls of the rope or cable are pulled down until the pulley blocks 21 can be hooked to the eyes 22, and the canvas 24 can then be hoisted tightly into position against the underside of the ribs, by hauling on the cables such as 25 which are then made fast on cleats such as 27, provided for the purpose on each of the ribs.

For lightness with strength the ribs are of built-up box section of the general form shown in Fig. 7, while the links are tubular. The whole framework is preferably of aluminum for further lightness.

Referring now to Figs. 5 and 6, the ribs such as 1, of the transverse arched beam members are strengthened at their upper ends by external side plates 30 and 31, and by internal top and bottom plates 33 and 34, which are welded or riveted thereto. The ribs such as 2, are similarly strengthened by side plates such as 36 and by internal top and bottom plates 38 and 39.

On each rib such as 2, below the plate 38, is a tongue piece 40 which extends into the end of a rib such as 1, and has a boss 41, which keys into a hole 42 through the plate 33 of the rib 1. Secured above the plate 39 of the rib 2, is a keeper piece 44 which extends over the end of the plate 34 of the rib 1, while a piece 46 is secured to the underside of the end of the rib 2 and extends below the underside of the end of the rib 1. The piece 46 is provided with a boss 47, which is bored for a bolt 48 which extends through the flanged sides of the rib 1 and the bored boss 47 of the rib 2, to lock the ribs 1 and 2 securely together to form a single arched beam member.

Brackets such as 50 and 51 are respectively provided on the ribs 1 and 2, and the downwardly cranked ends 54 of the links 17 forming the ridge, are pivotally connected therebetween by means of pivot pins such as 56. The downwardly cranked ends 54 of the links are formed as elbows with a plug connection to the tubular part of the links, of which the opposite ends have a similarly plugged end with a lug 58, which is pivotally connected to its adjacent link at its elbow, by pivot pins such as 59.

The bottom ends of the ribs are provided with feet 60 having side plates 61 and 62, which are riveted to the sides of the ribs as shown in Figs. 8, 9 and 10. There is a hole 64 through each foot 60 for a spike or stake such as 65 for anchoring each rib to the ground.

The links 15 and 16 are essentially similar to the links 17 described above. The links 15 are pivotally connected together by link pins 66, and their downwardly cranked ends 67 are pivotally connected to lugs such as 68 on each of the feet 60 of the ribs, by pivot pins such as 69. The links 16 are connected together in the same way as the links 15 and 17 and each has one downwardly cranked end, pivotally connected to brackets such as 72 on the ribs, intermediate of their ends.

It will be appreciated that the skeleton framework of the tent is semi-rigid, and that the transversed arched beam members will be maintained in parallelism by their connecting links of equal length, while adapting themselves to any unevenness in the surface of the ground longitudinally of the tent.

The radiating ribs of the half cupola shaped ends are self-accommodating to any unevenness of the ground because of their pivotal connections to the end transverse arched beam members. However, while the links between the transverse arched beam members may be of a fixed length at least some of those between the radiating ribs require to be adjustable as to length and for this reason they are provided with turnbuckles such as 75.

The tent shown in the drawings is 164 feet long and 80 feet wide, while the height from the ground to the ridge is 26 feet. In order that the tent may be capable of transportation over the highways in a motor truck, and so that the maximum length of any part shall not exceed 30 feet, each rib has been divided into two parts connected by a disconnectable joint 77 similar to the joint between the two ribs of each transverse arched beam member, hereinbefore described.

The canvas of the tent will of course be divided into sections of convenient size to handle, and which will be laced together in position. A smaller round tent may be made by using only the cupola shaped end portions, or one end portion alone may be used with or without any of the portion supported by the transverse arched beam members, as may be desired. Flaps serving as doorways are provided at any suitable places in the canvas of the tent as may be desired.

I claim:

1. A tent with a skeleton framework, including an arched beam member disposed in a vertical plane and a rib pivotally connected to said arched beam member at its middle and disposed in a plane normal to the arched beam member.

2. A tent with a skeleton framework including at least two ribs rigidly connected together to form an arched beam member disposed in a vertical plane, and a third rib pivotally connected to said arched beam member at its middle and disposed in a plane normal to the arched beam member.

3. A tent with a skeleton framework including pairs of ribs joined together to form transverse arched beam members disposed in parallel vertical planes, and a plurality of radially disposed end ribs of which one is pivotally connected to an end one of said arched beam members at its middle and disposed in a plane normal to said end arched beam member, and the remainder radiate from a spider connected to the said end arched beam member at its middle; all of said ribs being spaced from each other by links which are pivotally connected thereto.

4. The combination according to claim 3, in which each link has a downwardly cranked end which is pivotally connected to a rib, and an opposite end which is pivotally connected to an adjacent link.

5. The combination according to claim 3, in which the spider is hinged to the end arched beam member at its middle.

6. The combination according to claim 3, in which each rib has a foot adapted to be secured to the ground, and the pivotal links between the transverse arched beam members provide a semi-rigid framework which is self-adapting to any unevenness of the ground, there being turnbuckles in some of the pivotal links between the radiating end ribs for adjusting them to length to suit the pivotal position of the end ribs in adapting themselves to any unevenness of the ground.

7. A tent with a skeleton framework covering

5 a rectangular area with half circular end additions thereto, including pairs of ribs joined together to form transverse arched beam members disposed in parallel vertical planes over the rectangular area, and end ribs radiating from the middle of the end arched beam members over the half circular end area additions thereto; all of

said ribs being spaced from each other by links which are pivotally connected thereto.

8. The combination according to claim 7, in which the links constitute a ridge and at least one girt for the framework.

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