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AUTOMATIC SPRING TENSIONER FOR TENTS

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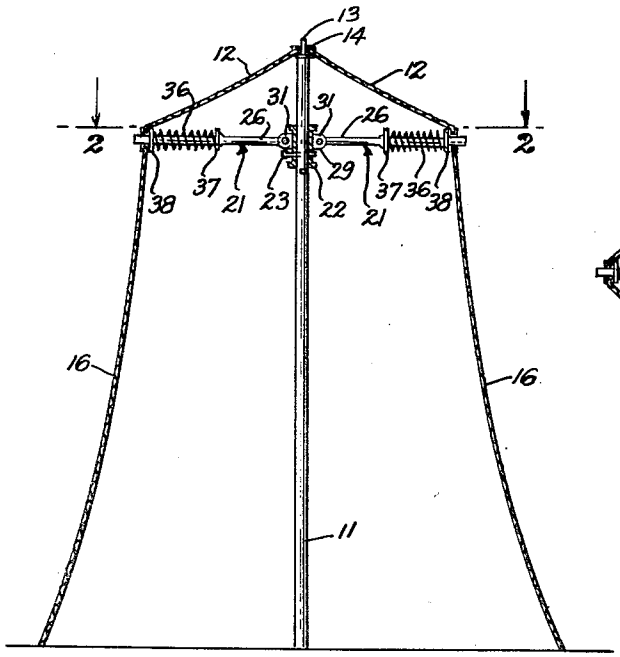


Fig. 1.

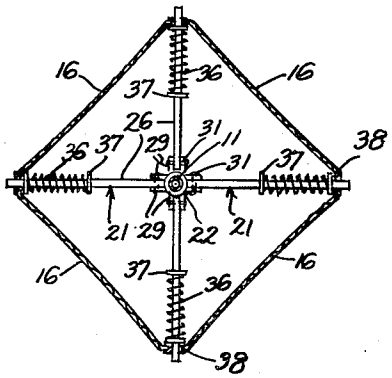


Fig. 2.

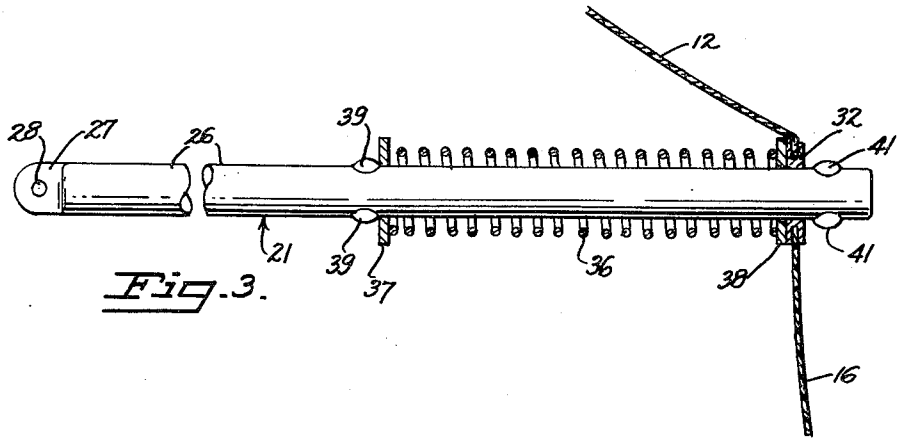


Fig. 3.

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AUTOMATIC SPRING TENSIONER FOR TENTS

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1 Claim. (Cl. 135—3)

This invention relates to new and useful improvements in automatic spring tensioner for tents and has particular application in connection with umbrella-type tents wherein a center pole is provided from which radially project substantially horizontal spreaders which engage the corners of the tent to apply tension thereto.

It is well known that adjustment or compensation of tension is required as the canvas of a tent expands and contracts with changes in weather conditions and stretching of the fabric after use. The present invention is concerned with an automatic means for maintaining the canvas at a proper degree of tension despite changes in conditions which would otherwise affect the same.

One of the features of the present invention is the provision of a spring associated with a tensioner arm so positioned that the force of the spring is applied to the tent canvas to maintain the canvas tight at all times. The provision of such a spring requires no manual adjustment as the conditions affecting the tension of the tent vary.

Other objects of the present invention will become apparent upon reading the following specification and referring to the accompanying drawings in which similar characters of reference represent corresponding parts in each of the several views.

In the drawings:

Fig. 1 is a vertical mid-section through a tent in which the present invention is installed.

Fig. 2 is a horizontal section taken substantially along the line 2—2 of Fig. 1.

Fig. 3 is an enlarged detail of the tensioner which is the subject of this invention.

A conventional umbrella-type tent employs a vertical center pole **11** which is suitably imbedded in the ground. Four downwardly slanted roof sections **12** made of canvas come together at the center of the tent and are maintained in elevated position by reason of a point **13** on the top of the center pole **11** passing through a hole **14** in the center, or other convenient means. The roof sections **12** are joined to four wall panels **16** which depend generally vertically from the outer edges of the roof sections **12**. In the accompanying drawings the tent is shown as having four roof sections **12** and four wall sections **16** but it will be understood that the number of such sections is subject to considerable variation depending upon the design of the tent.

In order to support the roof and walls under tension and in proper position and to give the tent a trim appearance, tensioners **21** are employed. Generally, such tensioners are mounted on a sliding ferrule **22** on the tent pole **11** and project radially outwardly from the tent pole to the four corners at which the roof and side sections coincide. By adjusting the elevation of the ferrule **22** relative to the tent pole, the horizontal component of the tensioner may be regulated and accordingly, the ferrule is initially placed in proper position to supply the required tension on the corners of the tent which

is required. When the ferrule **22** is once so positioned a thumb-screw **23** or other locking device may be employed to hold the ferrule in position and prevent it from sliding up or down on the tent pole. Adjustment of the position of the ferrule is somewhat difficult and it is undesirable that frequent adjustment be made. Therefore, the present invention has for one of its objects an automatic adjustment of the tension applied to the canvas by the tensioner **21** as the conditions affecting the expansion and contraction of the canvas change. Accordingly, a radially projecting rigid rod **26** of metal is provided and is hinged to the ferrule **22**. Various means may be employed to hinge the tensioner to the ferrule; as shown in the accompanying drawings, the inner end of the tensioner rod **26** is flattened as indicated by reference numeral **27** and apertured with hole **28**. A pair of radially projecting ears **29** is formed on the ferrule **22** in association with each of the tensioners **21**. Thus, four pairs of ears **29** are employed as shown in Fig. 2 for a four-sided tent. A rivet **31** passes through apertures in the ears **29** and also through the aperture **28**. This arrangement provides for swinging movement of the rod **26** in a vertical plane about rivet **31**.

The outer end of the rod **26** engages the tent wall at the intersection of the wall and the roof sections **16** and **12**. For such purpose, a hole is formed in the canvas of the wall **16** and preferably a reinforcement **32** such as a metal grommet or other conventional reinforcing means is installed around the edges of the hole. The outer end of the rod **26** projects through the reinforcement **32**. In order to provide tension against the tent wall **16** a coil spring **36** is installed around the outer end of the rod **26**. First and second washers **37** and **38** are placed at the inner and outer ends of the spring **36**, respectively, the outer washer **38** bearing against the side **16** and transmitting the pressure exerted by the spring **36** against the tent wall. The inner washer **37** is held in position by means of lugs **39** formed in the rod or any other suitable means for restricting inward movement of the spring **36**. To prevent dislodgement of the spring **36** and washers **37** and **38** when the tensioner is not in use, another pair of lugs **41** is formed adjacent the extreme outer end of the rod **26**, the outer lugs preventing the washers and spring from coming off the end of the rod. However, the outer lugs **41** are small enough so that they will fit through the grommet **32** or other reinforcement in the tent wall but at the same time are large enough so as to prevent the washer **38** from being dislodged.

In use, the tent pole **11** is inserted through the hole in the top of the tent and the pole is then placed in vertical position. At this stage of the operation the ferrule **22** is lowered and the rods **26** are not positioned in engagement with the tent wall. After the center pole **11** is erect, the ferrule **22** is raised into a position below its final position and at this time the ends of the rods **26** are inserted through the reinforcements **32** in the corners of the tent. The ferrule **22** is then raised into proper position so that proper initial tension is imparted to the canvas and when this position is found, the wing nut **23** or other locking means is tightened to hold the ferrule at that position. When the ferrule is properly located, the springs **36** impart a desired amount of tension to the tent walls. As climatic conditions and other conditions affecting the canvas result in expansion or contraction of the canvas the expansion and contraction is compensated by expansion and contraction of springs **36** without the necessity of adjusting the position of the ferrule **22** or making any other manual adjustment of the tensioning arms **21**.

Although I have described my invention in some detail by way of illustration and example for purposes of clarity of understanding, it is understood that certain

changes and modifications may be practiced within the spirit of the invention and scope of the appended claim.

What is claimed is:

Means for automatically adjusting the tension of a tent at eave-line corners formed with grommet apertures comprising a ferrule arranged for sliding movement on a tent pole, means for locking said ferrule in position relative to said pole, a plurality of rods, said rods being of substantially uniform thickness throughout from adjacent their inner ends to their outer ends, a corresponding plurality of means for articulately connecting said rods and said ferrule for vertical swinging movement of said rods, a plurality of helical springs, each said spring being carried by its corresponding rod adjacent the outer end thereof, said outer ends of said rods being of said uniform thickness, a first washer around each said rod at the inner end of said spring, means for restraining inward movement of said first washer, a second washer around each said rod at the outer end of said spring and biased outwardly thereby, and lug means mounted on said rods restraining outward movement of said second washer, said lug means and said rods being smaller than the grommet apertures of said tent and said second washer being larger than the grommet apertures.

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