

United States Patent [19]

Oberhaus

[11] 3,874,397

[45] Apr. 1, 1975

[54] FOLDABLE TENT

2,953,145 9/1960 Moss et al..... 135/2
3,738,378 6/1973 Williams..... 135/2

[75] Inventor: **Wilhelm Oberhaus**, Osnabruck, Germany

FOREIGN PATENTS OR APPLICATIONS

442,987 12/1948 Italy..... 135/2
1,540,516 8/1968 France..... 135/2

[73] Assignee: **Heinrich Zangenberg GmbH & Co.**, Osnabruck, Germany

Primary Examiner—Paul R. Gilliam
Assistant Examiner—David H. Corbin

[22] Filed: Aug. 8, 1973

[21] Appl. No.: 386,559

[57] ABSTRACT

Tent having a folding supporting framework and a tent cloth forming a roof portion. The supporting framework has stays, together with a clamping device, the stays leading down to the base corners of the tent and being hinged to a central member which, when the tent is erected, supports the center of the roof. The stays have bottom sections which can be folded outwards into an extended position in line with respective upper stay sections. The tent may have a closable entrance.

[30] Foreign Application Priority Data

Aug. 9, 1972 Germany..... 2239114

[52] U.S. Cl..... 135/2, 135/4 R, 135/14 V

[51] Int. Cl. A45f 1/04

[58] Field of Search 135/2, 3 C, 4 R, 4 B, 5 E

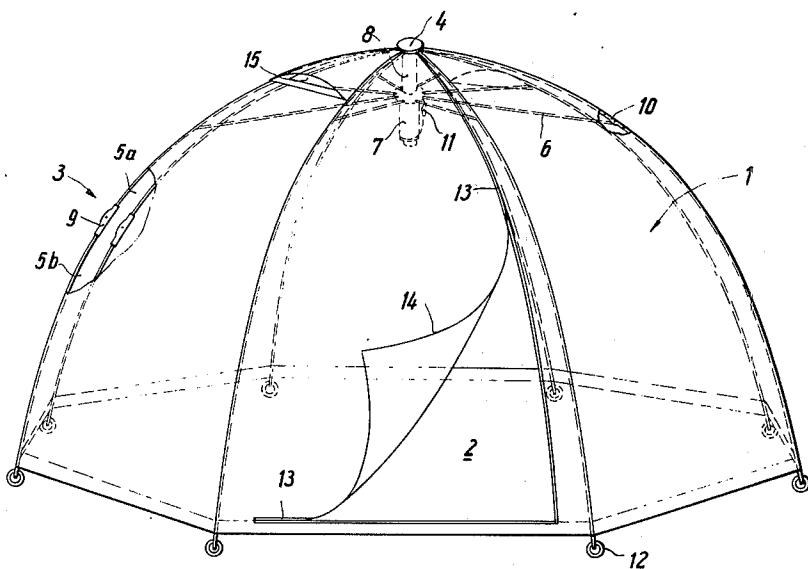
[56] References Cited

UNITED STATES PATENTS

1,449,894 3/1923 Dial 135/2

2,864,389 12/1958 Smith et al..... 135/2

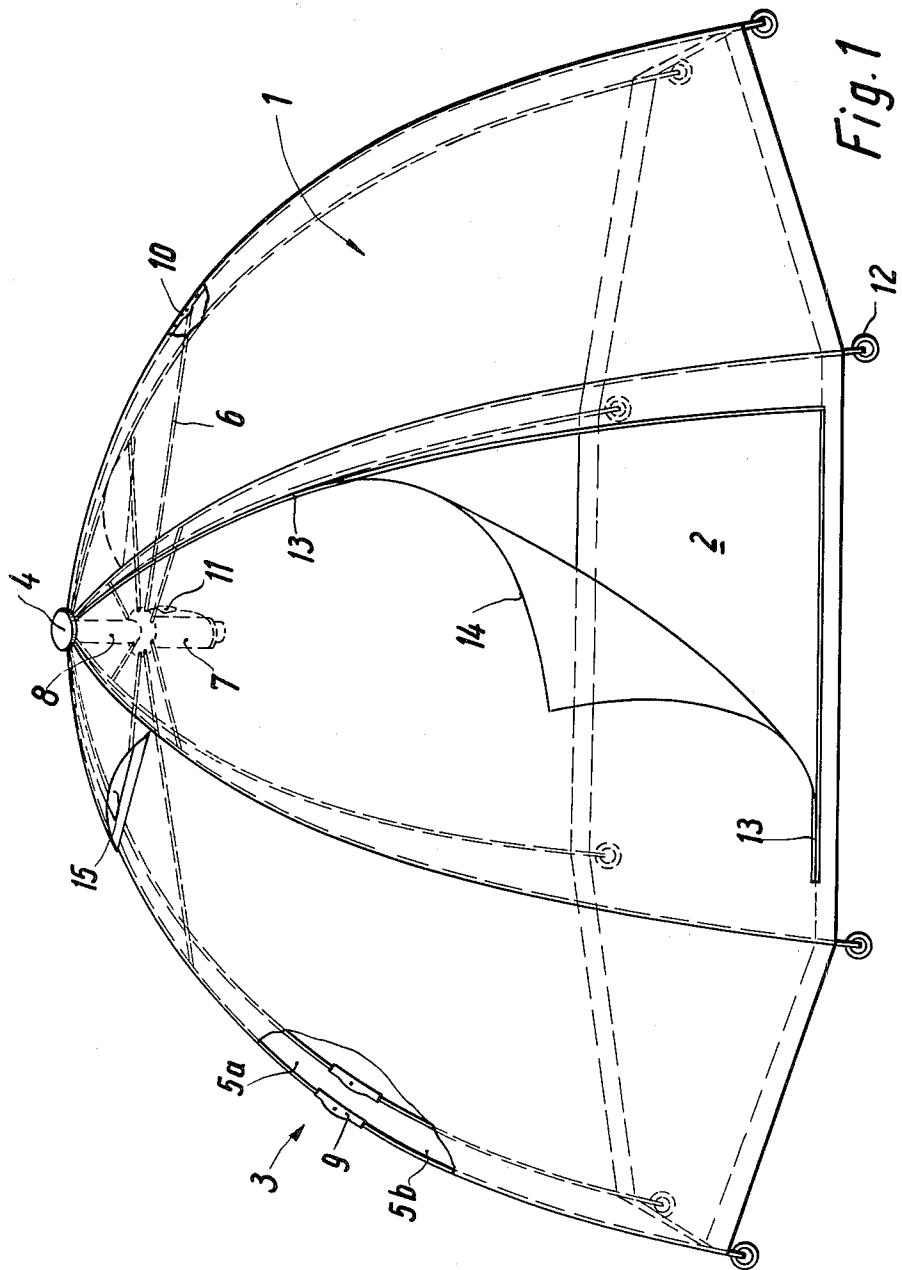
6 Claims, 3 Drawing Figures



PATENTED APR 1 1975

3,874,397

SHEET 1 OF 2



SHEET 2 OF 2

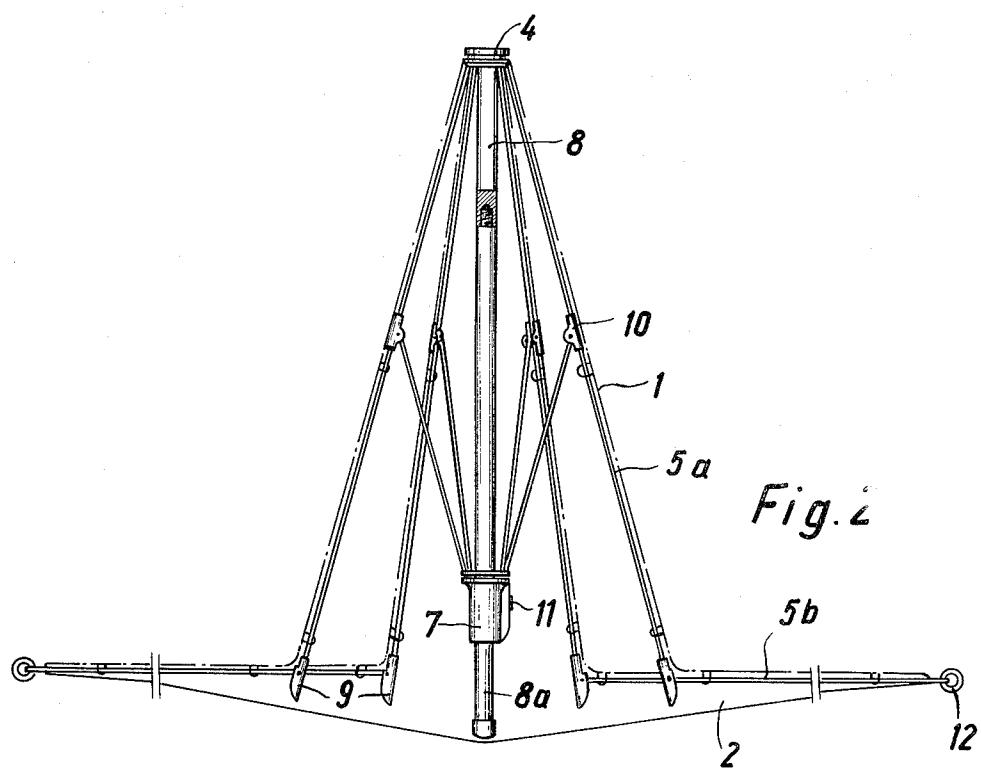


Fig. 2

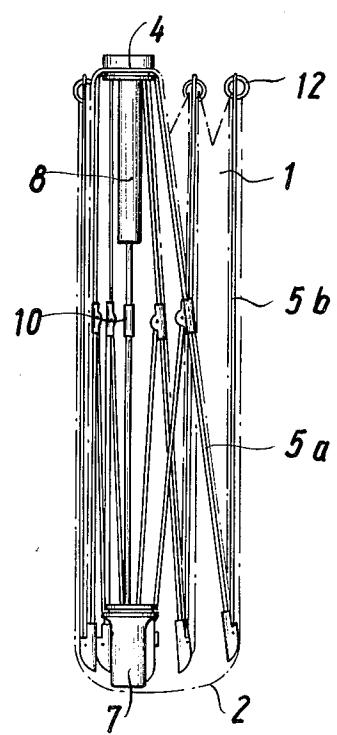


Fig. 3

1
FOLDABLE TENT

The present invention relates to a tent having a folding supporting framework and a tent cloth forming a roof portion. The supporting framework has stays, together with a clamping device, which lead down to the base corners of the tent and are articulated to a central member which, when the tent is erected, supports the center of the roof. The stays have bottom sections which can be folded outwards into an extended position in line with respective upper stay sections. The tent may have a closable entrance.

In a well-known tent of this kind, the supporting framework consists of four stays made up of three sections each, which are basically rigid and in each case have to be attached together in their erected position by means of special rocking elements. These stays give the tent a frusto-pyramidal shape, with a flat upper roof portion which is not connected with the tent cloth except at the internal, bottom ends of the stays. The stay sections adjoining the central member, are longitudinally displaceable in sockets and secured by means of pinchbolt connections, a coil compression spring associated with each stay section functioning to tension the erected supported framework.

The erection of the above-described known tent is a laborious and time consuming procedure, and is additionally complicated by the fact that the tent cloth does not naturally follow the movement of the stays. Consequently, the erection and dismantling of the tent generally requires two people. Furthermore, the extremely heavy supporting framework in the folded state occupies a considerable amount of space, and is expensive to manufacture.

It is an object of the present invention to overcome or to mitigate these difficulties.

The tent of the present invention has a folding supporting framework and a tent cloth forming a roof portion, the tent having a closable entrance. The supporting framework comprises stays together with a clamping device for such stays, the stays leading down to the base corners of the tent and being articulated to a central member. When the tent is erected the central member supports the center of the roof; the stays have bottom sections which can be folded outwards into an extended position in line with the respective upper stay sections. The stays, which give the tent a polygonal form in plan, such form being substantially hemispherical. The stays comprise two sections and form elastically flexible spring bars or rods of identical length which, at their bottom ends at the bottom corners of the tent, project beyond the tent cloth. The roof portion of the tent cloth is attached to the central member of the supporting framework, and is also attached at its bottom edge and at intermediate points to the stays. The clamping device consists of a slide which can be vertically displaced relatively to the central member and can be locked in an upper clamping position in which the stays are deflected outwards by means of yokes between the slide and the upper stay sections.

In accordance with one embodiment of the invention, when the tent is designed with a tent cloth consisting of a roof portion and a floor portion attached thereto, the floor portion of the tent cloth is sewed to the roof portion thereof at a location spaced from the bottom edge of the stays passing through the tent cloth to the outside.

2

A tent in accordance with the invention obviates or mitigates the difficulties of the prior art in a way which is as simple as it is neat, the tent cloth and the structure being combined into a tent unit whose erection and dismantling each takes no more than seconds. The roof portion of the tent cloth, during the unfolding and folding operations, follows the stay sections which are tensioned and relaxed by the clamping device and are simply locked and unlocked, during which it is insured that the tent cloth is able to follow the bowing of the stays. This also applies to a tent with a floor, because of the special method of attachment of the floor.

The simplicity and ease of handling of the tent go hand-in-hand with a low weight and a relatively low production cost. Furthermore, the tent can be folded up to form an extremely small package and can easily be carried in a rucksack. Accordingly, apart from its use for conventional camping purposes, and because it combines low weight, low cost, quick erection and dismantling and a compact volume when folded for transport, the tent is particularly useful for expeditions, folding boat trips, cycling tours, weekend trips and similar applications where a tent is required, for overnight stops, as weather protection and/or as protection against the sun.

An illustrative embodiment of the present invention will now be described, by way of example, with reference to the accompanying drawings, in which

FIG. 1 is a view in perspective of a tent in accordance with the invention, the tent being in the erected condition;

FIG. 2 is a schematic view in side elevation of the tent shown in FIG. 1, the tent being partially folded; and

FIG. 3 is a view of the tent similar to FIG. 2, the tent being fully folded.

The tent illustrated herein consists essentially of a tent cloth with a substantially hemispherically cut roof portion 1, a polygonal floor portion 2 permanently sewed on or into the roof portion 1, and a supporting framework 3 which can be folded (FIG. 3) or unfolded (FIG. 1).

In the erected condition shown in FIG. 1, the tent has the approximate form of a hemisphere with a polygonal in plan shape. However, the tent could equally well be given the shape of an oval body, by altering the cut of the roof portion, without modifying the supporting framework.

The supporting framework 3 here shown comprises eight stays 5, each of which consists of two sections 5a and 5b which are of substantially the same length, and are made from elastically flexible spring bars or rods. The upper stay sections 5a are hinged at their top ends to a central member 4 (designed along the lines of an umbrella) of the supporting framework 3 in such a fashion that they be pivoted in a limited range and can be deployed, from a folded inoperative condition (FIG. 3) in which they are substantially parallel to the axis of the central member 4, into a radial outward-extending operative position (FIG. 1). The upper stay sections 5a are hinged to the bottom stay sections 5b by hinges 9 which make it possible to fold the bottom stay sections 5b outwardly from the extended position shown in FIG. 1, in which they form extensions of the respective one of the upper stay sections 5a, into a position in which they are parallel to the upper stay sections 5a, as shown in FIG. 3.

The central member 4 forms the top end of a relatively short pole 8 which can be provided at its lower end with an extension 8a. This extension 8a can be releasably attached to the pole 8, e.g. by means (not shown) which may be for example, a screw fitting or a bayonet connection. A slide 7 can be slid vertically relatively to such member 4; bracing elements 6 are hinged to sleeve 7 at their inner ends. Bracing elements 6 are in the form of a rod which, through a fork end, are articulated by means of hinges 10 substantially to the center part of respective upper stay sections 5a. In its upper, locked position, the slide 7 can be retained on the pole 8, near the bottom end of the latter, by means of a schematically illustrated locking element which engages a detent recess in the pole 8. Such locking element may have as a component part thereof a pushbutton 11 by which it may be operated.

The roof portion 1 of the tent cloth is affixed to the central member 4 of the supporting framework 3, and is attached at its bottom edge to the bottom ends of the stays 5. This attachment can be of limited elasticity in order to permit small relative movements to take place, e.g. by the inclusion of a small series connected rubber loop not shown. Furthermore, the roof portion 1 is secured to the stays 5 at several points to the bottom ends thereof and the central member 4, so that said roof portion 1 of the tent cloth follows the movements of the stay sections 5a and 5b when the supporting framework 3 is unfolded and folded. The bottom ends of the stays 5 project beyond the bottom edge of the roof portion 1 of the tent cloth for a short distance; on the bottom ends of the stays 5 rings 12 pass through holes in the tent cloth. Tent pegs can be introduced into rings 12 in order to anchor the tent to the ground.

If the tent is designed with a tent cloth in which the roof portion 1, as in the illustrated example, is united to a floor portion 2, then the bottom ends of the stays 5 pass through the tent cloth to the outside, and the floor portion 2 is sewed to the roof portion at a location spaced from the bottom edge of the roof portion. With this design, the floor portion 2 extends from the seam joining it to the roof portion 1, in a downward direction when the tent is in the erected condition, the floor portion then resting on the surface upon which the tent has been erected. Consequently, the floor is not tensioned when the tent is erected, but through the agency of its outer edge portion, rising from the ground level to the level of the seam connecting portions 1 and 2, provides facility for compensation when the stay sections are folded together. This purpose is also served, in the embodiment of the tent which has a sewn-in floor, by the passage of the bottom ends of the stays through the tent cloth.

In the roof portion 1 of the tent cloth, between two stays 5, there is an entrance 14 which can be closed by means of a fastener 13 such as a zipper. The top area of the roof portion 1 of the tent cloth also contains a ventilation flap or opening 15 between two stays 5.

The erecting of the tent, commencing with the completely folded position of the parts shown in FIG. 3 is carried out as follows:

First of all, the bottom stay section 5b complete with the roof portion 1 and floor portion 2 of the tent cloth secured to them are folded outwardly in the manner illustrated in FIG. 2, which shows an intermediate position of the parts of the tent. In this intermediate position, the person erecting the tent can pass his arm

through the entrance 14 into the interior of the tent, and, using a single movement, slide the sleeve 7 along the pole extension 8a upwards into its upper locking position and lock it there. As a consequence of this movement of the slide, the upper sections 5a of the stays are folded upwards by means of the hinged braces 6, and are moved into the extended position vis-a-vis the bottom stay sections 5b which are connected thereto by hinges 9. Thereafter, with continuing upward movement of the slide 7 towards the central member 4, the stays 5 are bowed outwards throughout their full lengths. This condition is shown in FIG. 1.

In the position in which the stays are bowed out, thus defining the space of the tent, the hinges 9 are disposed past their dead center position, thus insuring, in association with the action of the braces 6, that the stays 5 are reliably stably fixed in shape. As soon as the locking element of the slide, e.g. a locking extension on the locking pushbutton 11, has engaged in the detent recess in the pole 8, the overall tent is statically stiffened and its erection is completed. The extension section 8a of the pole, which facilitates the tensioning and relaxing of the supporting framework 3, can be removed in order to give the tent an unobstructed interior. After erection of the tent in this way, the tent can be secured to the ground by means of tent pegs in association with the rings 12 at the projecting ends of the stays 5, and also additionally so secured, if required, by means of tent ropes whose tent ends are in each case attached to the stays 5, for example at the level of the hinges 9 while their other ends are attached to the ground by means of rings and tent pegs (not shown).

The tent is dismantled, commencing from the tensioned erected state illustrated in FIG. 1, by following the reverse sequence of operations. By unlocking the slide 7 and moving it down, the supporting framework 3 is relaxed and its component parts are displaced into the intermediate position shown in FIG. 2. The bottom stay sections 5b are now folded, commencing from the position shown in FIG. 2, whereupon any air still remaining inside the tent is expressed by pressing or rolling it together into the condition shown in FIG. 3. Thereafter, the tent can easily be slid into a packing bag and is thus ready for transportation and for subsequent re-use.

The stays 5 or stay sections 5a, 5b, which are made of spring material, can, for example, be made of round-section wire, or equally well of profiled rods, e.g. U-section rods. If made of spring steel, for example, the stays are extraordinarily light and neat, but nevertheless impart high stability of shape to the tensioned erected tent, because of the tension in the supporting framework. Instead of the eight stays illustrated, it is possible to use 6, 7, 9 or more. Eight stays, however, has been found to be a particularly suitable number from the point of view of manufacturing cost, weight, foldability and other factors. The hinges 9 can take the form of simple punched sheet metal pressings. The tent cloth can be made of any material suitable for application to tents, and normally, and indeed preferably, has a certain degree of elasticity in order that it will not interfere with the folding movements of the stay sections and on the other hand, in the erected condition, to present a smooth, creasefree and pleasing appearance. Instead of the pole 8, which in the illustrated example is fixed to the central member 4, it is also possible to employ a correspondingly short pole to the slide 7,

which in this case is secured in the slide 8, extend upwards therefrom, and can be locked at its upper end to the central member 4.

Although the invention is illustrated and described with reference to a plurality of preferred embodiments thereof, it is to be expressly understood that it is in no way limited to the disclosure of such a plurality of preferred embodiments, but is capable of numerous modifications within the scope of the appended claims.

What is claimed is:

1. A tent having a folding supporting framework and a tent cloth forming a roof portion and a floor portion integral with said roof portion, the supporting framework comprising a central member and stays together with a clamping device for them, the stays leading down to the base corners of the tent and being articulated to the central member, the central member supporting the center of the roof when the tent is erected, the stays having upper and bottom sections, the bottom sections of the stays being foldable outwards to an in-line extended position with respect to the respective upper stay sections, the extended sections of the stays giving the tent a polygonal plan form of substantially hemispherical shape, the two sections of the stays being formed of elastically flexible spring rods of substantially identical length, the bottom sections of the stays at their bottom ends projecting beyond the tent cloth at the bottom corners of the tent in both the erected and folded conditions, the roof portion of the tent cloth being attached to the central member of the supporting framework and also, at its bottom edge and at intermediate points, to the stays, braces between the slide and

the upper sections of the stays, and the clamping device comprising a slide which can be vertically displaced relatively to the central member and locked in an upper clamping position in which the stays are deflected outwards by means of said braces between the slide and the upper stay sections, said floor portion is attached to said roof portion, and said floor portion is sewed to the roof portion of the tent cloth at a location spaced from the bottom edge of said roof portion, the section of the floor portion which is spaced from the bottom edge of said roof portion follows the general contour of the roof portion and extends upwardly from the ground surface when the tent is fully erected, the bottom ends of the stays passing to the outside through the tent cloth.

2. A tent as claimed in claim 1, in which the ends of each of the stays which are outside the tent cloth are equipped with a ring for attachment of the tent to the ground.

3. A tent as claimed in claim 1, in which the central member forms the top end of a short pole provided with a detachable extension that can be locked to said short pole.

4. A tent as claimed in claim 1, having one or more ventilation flaps provided in the roof portion of the tent cloth.

5. A tent as claimed in claim 1, comprising a closable entrance through the tent cloth.

6. A tent as claimed in claim 5, wherein the closable entrance is disposed between two successive stays.

* * * * *

35

40

45

50

55

60

65