May 21, 1957 A. E. CLARK 2,792,844

COLLAPSIBLE TENT

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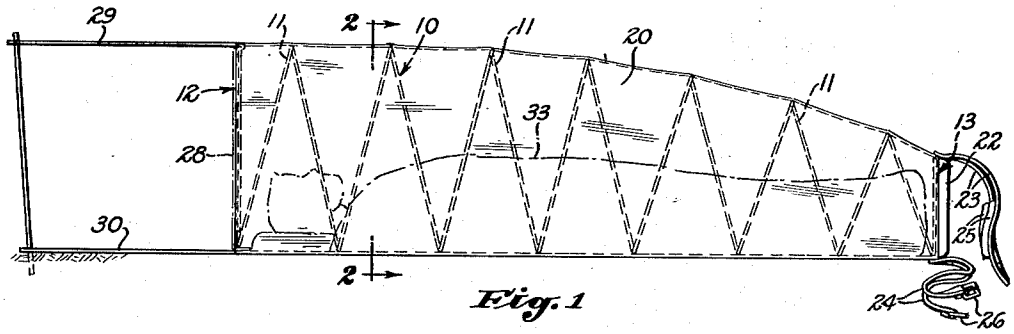

Fig. 1

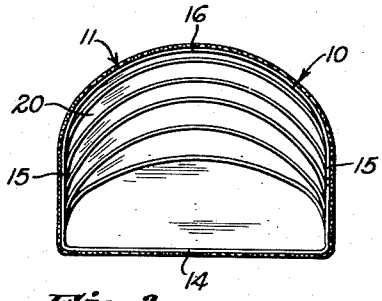

Fig. 2

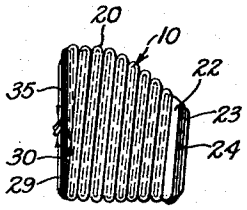

Fig. 3

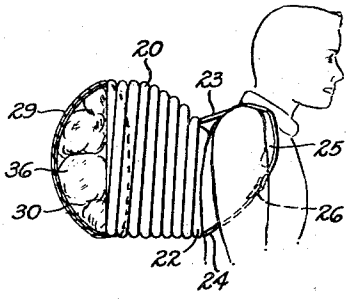

Fig. 5

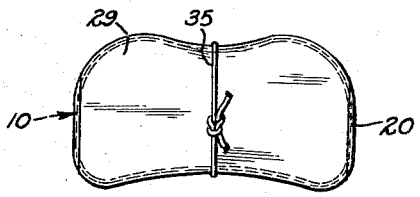

Fig. 4

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COLLAPSIBLE TENT

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1 Claim. (Cl. 135—1)

This invention relates generally to camping tents and more particularly to a tent of relatively small size capable of being carried on the back of a hiker or camper and quickly set up on the ground for sleeping purposes.

Various types of sleeping tents have been proposed in the past for providing comfort and protection against weather conditions, insects, etc., for the person sleeping upon the ground. Such prior tents have included a plurality of staves, over which is secured a hood or roof of canvas or other water-resistant material. Since such tents are not self-sustaining, it has been necessary to utilize an auxiliary frame-like support in the nature of a pair of vertical poles driven into the ground and a reach pole extending between the upper ends of the vertical poles and over which the roof material is draped. As will be apparent, such a tent has several disadvantages, one of which is that considerable time and effort is required to set up the tent for use and this is frequently of great importance, particularly where the hiker is fatigued and the ground is hilly and/or rocky. In addition, it has been found that such tents are quite apt to collapse when subjected to winds of high velocity which may cause disconnection of the reach pole from the end poles, particularly where the wind is allowed to enter the tent through ventilation openings. Another disadvantage resides in the fact that the tent, having once been set up for use, is immobile except by first disassembling its parts, so that the tent cannot readily be moved to a new location to escape a wind or other storm which may develop during the night. Moreover, such a tent is of a relatively heavy nature and cannot be folded into a real compact unit, the inclusion of the supporting poles in the folded tent resulting in a cumbersome package which impedes free movement of the hiker in maneuvering up and down steep slopes, over rocks, brush, fences, etc.

It is therefore an object of this invention to provide a new and improved tent, of the general class discussed above, which is extremely simple in construction and highly practical in use, and one which is self-sustaining so that the need for extraneous supporting and hold-down devices, such as end poles, a reach pole, or stakes, is effectively avoided.

Another object of the invention is to provide a tent, of the character referred to, which consists primarily of an elongate, tapered, coil spring frame having convolutions of substantially semi-circular configuration, and a light-weight, waterproof tubular covering secured to and completely enclosing the spring frame, said tubular covering being closed at one end. In accordance with another object and feature of the invention, the self-sustaining tent structure is constructed of a size capable of receiving a sleeping-bag into which the camper may slide through the open end of the tent. By the improved structure outlined above, the tent is made self-opening, due to the inherent expansibility of the spring frame so that upon arriving at the camp site, the tent is released to allow it to expand rapidly to its operative size and

shape. After use, the tent is contracted into a small, compact unit suitable for carrying on the back.

A further object of the invention is to provide a tent, of the class referred to, having means for closing the open end thereof, said means being in the nature of an insect netting. A related object is to provide means by which the tent may be retained in its folded condition, said means also serving as shoulder straps for facilitating carrying the tent unit on the back.

Further objects of the invention will appear from the following description and from the drawing, which is intended for the purpose of illustration only, and in which:

Fig. 1 is a side view of my improved tent in extended, operative condition;

Fig. 2 is a cross-sectional view through the tent, taken on line 2—2 of Fig. 1;

Fig. 3 is a side view of the tent in its folded or collapsed condition;

Fig. 4 is an end view of the same; and

Fig. 5 is a view of the folded tent, showing it applied, in the manner of a knapsack, to the back of the camper.

Referring to the drawing in detail, my improved tent includes a frame **10** which, as shown, consists of a coil spring which may be approximately six or seven feet long, the coils or convolutions **11** of the spiral being of gradually reduced size from the head end **12** to the foot end **13** of the tent. As shown in Fig. 2, each coil of the spring frame **10** provides a rib and is substantially semi-circular in outline, having a straight, horizontal base portion **14**, substantially straight side portions **15** and a rounded, dome-like, upper portion **16**. The spring frame may be constructed either from resilient wire or flat strip stock, as desired.

Secured to the ribs **11** of the frame, as by sewing, and encircling the frame is a tubular cover **20** of water resistant material, for example, light-weight canvas. The tubular cover **20**, is tapered to conform to the taper of the frame **10** and its end of smallest girth is carried over the corresponding end of the frame and secured thereto to close this foot end **13** of the tent. Secured in place against this end of the tent are cushions **22** which serve the function to be later explained, said cushions preferably consisting of blocks of sponge rubber encased in waterproof fabric. Also attached to the end **13** are upper and lower pairs of straps **23** and **24**, the upper straps carrying pads **25** and having free ends insertable through buckles **26** at the free ends of the other straps.

At the opposite open end **12** of the tent, a screen **28**, in the form of a piece of mosquito netting, is secured to the upper portion **16** of the first, largest rib **11** of the frame, said netting being adapted to be extended across the open end of the tent with its lower edge tucked under the base portion **14** of said rib. The upper portion of the tubular cover **20** may be extended beyond the head end **12** of the tent in a strip or flap **29**, if desired, may be used as a canopy. The lower portion of the cover is also extended to provide a similar flap **30**.

As previously indicated, the tent is designed primarily as a protection for a single camper who slides into the tent through its open head end **12**. To provide additional protection, and warmth, a conventional sleeping bag **33** may be inserted into the tent through the open end **12**. With the tent in its extended condition, and placed upon the ground, as shown in Fig. 1, the camper simply slides into the sleeping bag within the tent, after which the insect netting **28** is drawn across the open end of the tent. In the event of extremely low temperatures, or inclement weather conditions, either or both flaps **29**, **30** may be drawn partly across the opening.

With the camper in place, the tent provides complete protection against adverse weather conditions, such as rain and wind, and against insects, such as mosquitos.

The comfortable qualities of a conventional sleeping bag are well known and it will be apparent that the combination sleeping bag and tent covering make for great comfort and restful sleep while at the same time affording a high degree of protection for the camper. It is to be particularly noted that the particular cross-sectional shape of the tent provides, in effect, a structure of the "Quonset hut" type. Due to this stream-line contour, the structure is capable of withstanding winds of high velocity, such as are frequently experienced at high altitudes on mountains. If, for any reason, it becomes advisable to shift the tent to a more sheltered area during the night, the camper simply slides out from the tent, moves the tent to the new location and then re-enters the tent. Should the occasion arise where anchoring of the tent to the ground may be advisable, the straps **23** and **24** may be secured to stakes driven into the ground, or around a rock or the trunk of a small tree.

Upon awakening in the morning, the camper simply slides out from the sleeping bag and tent and when he is ready to resume his hiking he folds the tent into a compact unit in the manner next explained. To fold the tent, the camper merely contracts the tent lengthwise, the coils or spiral ribs **11** of the frame **10** yielding to permit this action. The contracting of the tent may be accomplished by holding it upright with the small end **13** resting upon the ground and then forcing the larger end **12** downwardly to compress the spring frame **10**. During this contraction of the tent, the cover **20** becomes accordion-pleated between the ribs **11** as shown in Fig. 3. It is also to be noted that the sleeping bag, which remains in the tent, is likewise contracted and pleated. A rope or strap **35** is then drawn around the collapsed tent as indicated in Fig. 4 to provide a very compact and relatively light-weight unit.

With the tent thus collapsed and tied, various articles **36**, such as food, clothing, utensils, etc., may be placed against the side of the unit and held in place by the top and bottom flaps **29** and **30** which are folded over the articles, as shown in Fig. 5, with their ends suitably secured to the folded cover **20**. The ends of the straps **23** and **24** are next joined together by means of the buckles **26** to provide loops through which the arms of the camper are inserted to mount the entire assembly on his back. The unit thus is, in effect, a knapsack which may be carried with ease when the camper resumes his hiking. The soft cushions **22** and pads **25** rest against the back and shoulders so as to cushion the load, minimize fatigue and prevent chafing of the skin.

Upon arriving at a new camp site, the camper again sets up the tent for use, the procedure being the reverse of that outlined above. That is to say, the straps **23** and **24**, and the flaps **29** and **30** are disconnected. With the articles **36** thus unloaded, the rope or strap **35** is removed, thus releasing the coils of the spring frame **10**. At this time, the largest coil **11** at the end **12** is held between the hands and the helical frame is allowed to expand axially to the shape illustrated in Fig. 1, this movement also causing the cover **20** to be stretched out as shown in this view to prepare the tent for use. It is thus seen that the tent is automatically set up for use and is, therefore, self-opening.

It will be observed from the foregoing that the present improved tent has many highly desirable qualities which are not inherent in sleeping tents proposed in the past. To recapitulate, the tent is extremely simple in

construction and thus may be manufactured and sold at a low cost. Due to its tubular or bag-like nature, the tent is self-sustaining and requires no stakes, poles or ropes to retain it in position during use so that it may be quickly set up without anchoring means of any kind. It has been shown that the tent is weather proof and insect proof, and due to its streamline or "Quonset hut" shape it is capable of withstanding winds of high velocity even though it is not anchored to the ground; and due to its hollow, air-tight covering, it has been found that the wind does not penetrate inwardly beyond a few inches from the open end of the tent. As another important feature, the tent is very light in weight, on the order of approximately three pounds, and thus may be carried about without fatigue on the part of the hiker. Since the tent is a self-contained unit and has no extraneous supporting and anchoring devices, it is collapsible into a very compact, flat package which may be stored in a very small space in an automobile, or conveniently carried upon the back of a person. By providing the attached straps and pads, the collapsed tent may be supported on the back, in the manner of a knapsack and may serve as a holder for other camping articles. The improved tent is therefore especially suitable for use by hikers, hunters, Boy Scouts and military personnel.

In accordance with the provisions of the patent statutes, I have described the principle of operation of my invention, together with the tent structure which I now consider to represent the best embodiment thereof, but I desire to have it understood that the tent shown is only illustrative and that the invention may be carried out by modified means.

I claim as my invention:

A collapsible tent structure of the character referred to including an elongate normally extended coil spring having head and foot ends and a plurality of longitudinally spaced coils, each coil being of progressively smaller perimetrical size from the head end of the spring to the foot end thereof and having a straight horizontally disposed bottom portion extending substantially transverse the longitudinal axis of the spring and an arcuate upper portion, an elongate substantially tubular flexible cover enclosing said spring and having its ends secured to the coils at the ends of the spring a pad secured to and closing the foot end of the spring and cover, said tent being yieldingly collapsibe longitudinally with said coils assuming a side-by-side relationship with each other and with the cover folded therebetween, means for securing the tent in said collapsed position, and shoulder straps connected to the pad at the foot end of the tent by which the collapsed tent can be supported on the back of a person in the manner of a knapsack.

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