June 4, 1968 R. O. WALKER 3,386,456

PORTABLE SHELTER

Filed Nov. 16, 1965 2 Sheets-Sheet 1

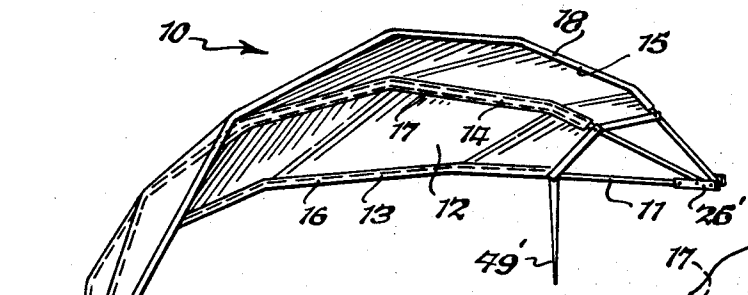


Fig. 1.

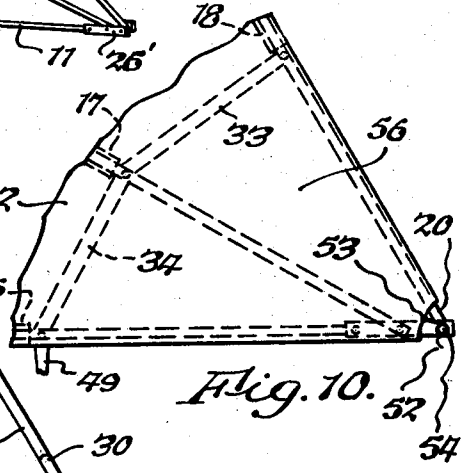


Fig. 10.

Fig. 2.

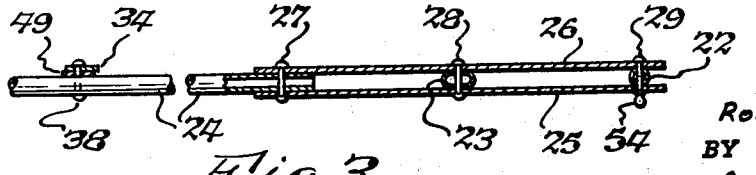


Fig. 3.

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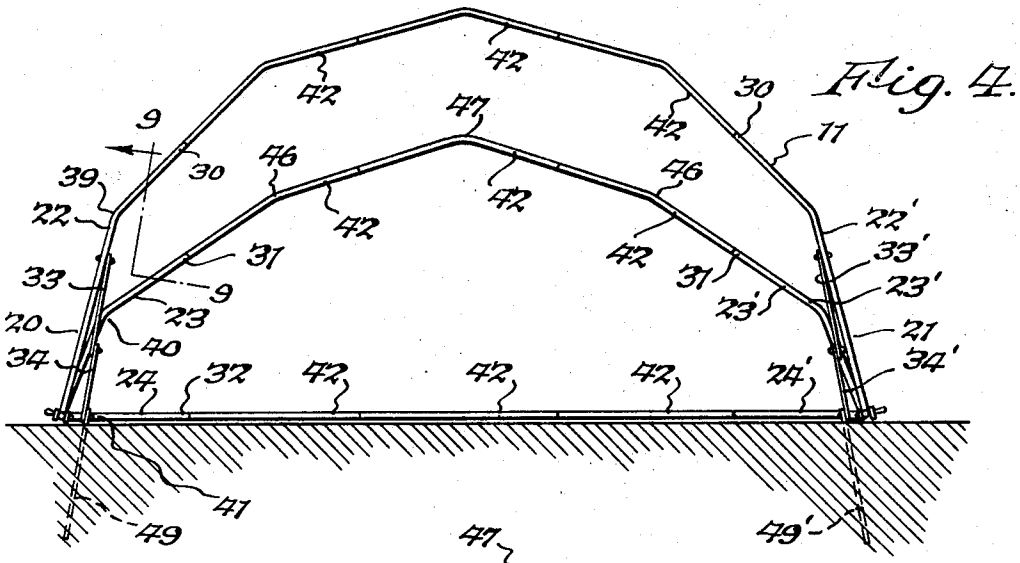


Fig. 4.

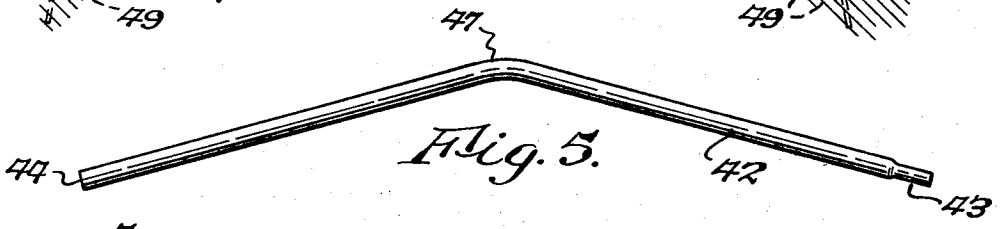


Fig. 5.

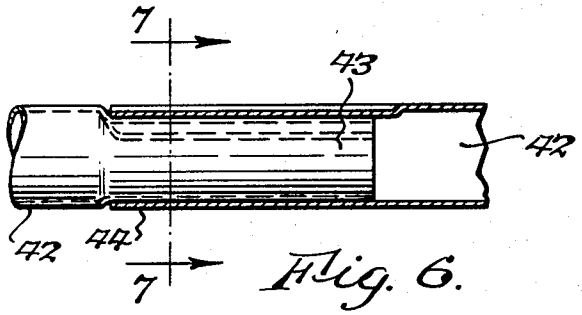


Fig. 6.

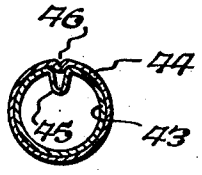


Fig. 7.

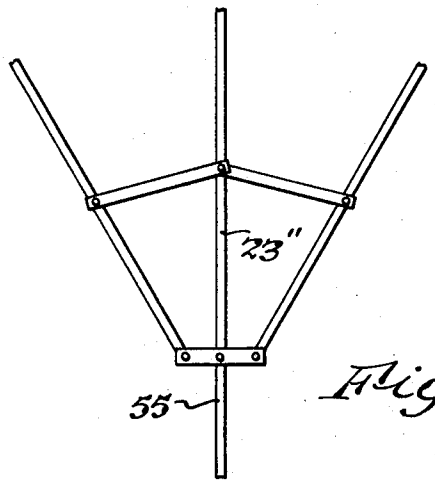


Fig. 8.

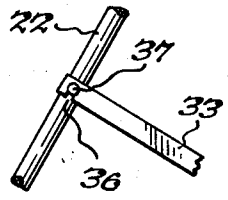


Fig. 9.

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United States Patent Office 3,386,456 Patented June 4, 1968

3,386,456

PORTABLE SHELTER

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Filed Nov. 16, 1965, Ser. No. 508,061
3 Claims. (Cl. 135—7.1)

The present invention relates to a portable shelter and more particularly one of the type which is used at the beach or alongside a swimming pool for shielding the occupants thereof.

In the past various types of portable shelters have been devised. However, these prior shelters all had certain deficiencies which rendered them manifestly unsuitable for use both at the beach and at home pools and such shelters also were of a sufficiently large size so that they were not conveniently portable, as for instance, in the trunk of an automobile.

It is accordingly one object of the present invention to provide an improved portable shelter which can in an extremely simple and convenient manner both be firmly anchored against winds prevalent at the beach and can also be located on a concrete base in an area sheltered from winds, as alongside a home swimming pool.

Another object of the present invention is to provide an improved portable shelter having a plurality of uniquely integrated lightweight parts which permit the shelter to be disassembled into a relatively compact bundle for ease of portability. A related object of the present invention is to provide a portable shelter having a plurality of rib sections which are interchangeable with each other to thereby enhance the ease of assembly. Other objects and attendant advantages of the present invention will readily be perceived hereafter.

The improved portable shelter of the present invention includes a frame portion having first and second opposite end portions which are essentially mirror images of each other. Each of said end portions has legs which form counterpart pairs with corresponding legs of the other end portion. A plurality of rib members connect the ends of the legs to each other to thereby provide a frame for receiving a suitable sheet-like cover. Each of the rib members is identical to the other and therefore any of the rib members can be used in any location in joining the opposite end portions of the frame. Each of the end portions, which contains a plurality of legs, can be opened to an expanded condition for use or can be closed to a contracted position to enhance ease of portability. Each of the end portions also includes a spike pivotally connected to one of the legs thereof and the spike may be positioned for impalement into the ground to thereby stabilize the shelter against winds normally experienced at a beach or the spike can be pivoted to a position where it does not have to enter the ground to thereby permit the shelter to be utilized at the side of a sheltered pool where winds are not experienced and where the base on which the shelter is mounted is too hard to receive the spike. In addition, each spike assumes a position alongside the leg of each end portion when it is in a contracted portable condition and therefore the spike cannot catch on or injure foreign objects. The cover which is associated with the portable shelter receives the ribs of the frame within suitable sleeves and is attached to the frame at its ends by simple ties. To further enhance ease of portability the cover may be entirely removed from the frame and folded. The entire portable shelter is sufficiently small so that it conveniently fits within a small portion of the trunk of an automobile and therefore can readily be transported, as required with a minimum of inconvenience. The present invention will be more fully understood when

the following portions of the specification are read in conjunction with the accompanying drawings wherein:

FIGURE 1 is a perspective view of the portable shelter in its assembled condition including both the frame and the cover mounted thereon;

FIGURE 2 is a side elevational view showing the portable shelter mounted on a surface, such as found at the beach, with the spike driven into the ground to stabilize the shelter;

FIGURE 3 is a fragmentary cross sectional view taken substantially along line 3—3 of FIGURE 2;

FIGURE 4 is a front elevational view of the portable shelter shown in FIGURE 2;

FIGURE 5 is a plan view of one of the rib sections which are utilized in joining the end portions;

FIGURE 6 is a cross sectional view showing the sliding connection which is utilized in joining the rib members to each other and for joining the rib members to the end portions;

FIGURE 7 is a cross sectional view taken substantially along line 7—7 of FIGURE 6;

FIGURE 8 is a side elevational view of an alternate form of end portion which may be utilized;

FIGURE 9 is a detail view taken substantially along line 9—9 of FIGURE 4 and showing how the latching struts connect to the leg portions; and

FIGURE 10 is a fragmentary view showing the manner in which the cover is secured to the frame.

In FIGURE 1 the complete portable shelter **10** is shown which consists of a frame **11** and a cover **12** having sleeves **13**, **14** and **15** thereon which are formed by sewing strips of material **16**, **17** and **18**, respectively, on cover **12**.

The frame **11**, FIGURES 2 and 4, includes a pair of substantially mirror image end portions **20** and **21**. End portion **20** includes a plurality of tubular leg portions **22**, **23** and **24** having first ends (not numbered) pivotally connected between spaced plates **25** and **26** (FIG. 3) by rivets **27**, **28** and **29**, respectively, which function as pins. The opposite ends of leg portions **22**, **23** and **24** terminate at **30**, **31** and **32**, respectively.

Latch strut **33** extends between legs **22** and **23** (FIG. 2) and latch strut **34** extends between legs **23** and **24** when the end portion **20** is in an expanded condition. The adjacent ends of struts **33** and **34** are pinned to leg **23** by rivet **35**, for pivotal movement thereabout. As can be seen from FIGURE 9, the opposite end of strut **33** has a U-shaped opening **36** thereon which mounts on pin **37** protruding from leg **22**. A similar U-shaped opening (not shown) is provided at the end of strut **34** remote from pin **35**, this opening receiving pin **38** extending through leg **24**. It will therefore readily be appreciated that struts **33** and **34** may be detached from latching engagement with pins **37** and **38**, respectively, to permit end portion **20** to be folded. In this respect after the unlatching is effected, struts **33** and **34** are pivoted to lie substantially parallel to leg **23**, and legs **22** and **24** are moved toward leg **23** so that the three legs essentially therefore occupy a parallel relationship. At this time it will be noted that plates **25** and **26** will pivot to a position wherein they lie substantially perpendicularly to legs **22**, **23** and **24**. It can thus be seen that end portion **20** can be manipulated into a contracted condition for ease of portability by unlatching struts **33** and **34** and thereafter pushing legs **22**, **23** and **24** together.

At this point it is to be noted that bends **39**, **40** and **41** are provided in legs **22**, **23** and **24**, respectively, to cause the end portions **30**, **31** and **32**, respectively, to tend to extend toward the opposite end portion **21** when the frame is assembled, as can be seen from FIGURE 4.

End portion **21** is substantially a mirror image of end

portion 20 and contains leg portions 22', 23' and 24' which in combination with legs 22, 23 and 24 form counterpart pairs 22–22', 23–23' and 24–24' when the frame 11 is in the assembled condition shown in FIGURE 4. In view of the fact that this mirror image relationship exists it is deemed unnecessary to further describe the details of construction of end portion 21.

In order to join the end portions 20 and 21, a plurality of identical rib members 42 (FIG. 5) are provided. Each of these members has a male portion 43 at one end thereof and a female portion 44 at the opposite end which fit with mating female and male members as shown in FIGURES 6 and 7. More specifically, the male end 43 of each tubular member 42 is reduced by a combined bending and quasi-swaging process wherein the end of the member 42 is bent to form a pronounced U 45 (FIG. 7) to thereby effectively decrease the cross sectional diameter of end 43. The end 44 is subjected to a like process wherein a very shallow U 46 is formed therein to very slightly reduce the cross sectional diameter of end 44. It will be noted from FIGURE 7 that U 46 forms a keyed relationship with U 45, thereby insuring that when adjacent rib members 42 are joined they will all lie in proper orientation, that is in the same plane, thereby enhancing ease of assembly. In other words, the adjacent ribs 42 cannot be connected except when they are oriented to provide the keyed relationship. It is to be also noted that each of rib members 42 is identical so that any of these members can be joined to any of the other members to provide the three elongated frame members each consisting of three ribs which join the counterpart legs of the end portions 20 and 21.

At this time it is to be noted that end portions 20 and 21 are not exact mirror images. In this respect, for example, ends 30, 31 and 32 of legs 22, 23 and 24, respectively, of end portion 20, may have a female connection, such as 44 for receiving male ends 43 at the ends of rib members 42. If this is the case, then the counterpart ends of legs 22', 23' and 24' will then have to have male ends which are received in female portions 44 of rib members 42. The foregoing distinction is the only difference between the substantially mirror image end portions 20 and 21.

It is also to be noted that each rib member 42 is bent at 47. When it is considered that three rib members 42 are connected together and when it is considered that the opposite end portions have bends such as 39, 40 and 41 in the leg portions thereof, it will be seen that the shelter, in assembled condition, has a 180° bend at its base and has the same bend at its upper portion with the bends formed by the assembled rib members and leg portions essentially converging at plates 26 and 25 at one side of the shelter and at the corresponding plates at the opposite side of the shelter. Since each return bend of 180° is divided into five members, namely, three rib members and two leg portions, each bend is relatively shallow, so that the parts in which the bends occur are relatively straight, thereby further enhancing ease of handling.

The frame 11 also includes spikes 49 and 49' attached to end portions 20 and 21, respectively. More specifically, one end of spike 49 is pivotally mounted on pin 38 (FIGS. 2 and 3) so that it may assume a position substantially perpendicular to leg 24 or be pivoted to a position wherein tip 50 points to rivet 27, and in this position spike 49 lies substantially parallel to leg 24. An analogous arrangement is provided for spike 49' forming a part of end portion 21. The foregoing arrangement permits the portable shelter to be anchored by driving spikes 49 and 49' into the ground, as for instance in the sand at the beach, to thereby stabilize the shelter against winds which are prevalent there. However, in the event that it is desired to set up the portable shelter at a relatively sheltered side of a home pool or the like where the ground is hard or where the surface is of concrete, spikes 49 and 49' are pivoted upwardly to lie parallel to legs 24 and 24' to thereby permit the shelter to be utilized without the anchoring otherwise provided by the spikes in the position shown in FIGURES 2 and 4. It is also to be noted that spikes 49 and 49' are folded to a position parallel to the legs on which they are pivoted during the time that the end portions are folded to thereby enhance the ease of portability without the possibility of the sharp spikes effecting injury by catching onto foreign objects.

At this point it is to be noted that each of rib members 42 is approximately 35 inches long and each of the end portions 20 and 21 is also of approximately this length. In addition the plates 25 and 26 are approximately 6½ inches long. Thus, whenever the entire frame is disassembled and the end portions 20 and 21 are contracted, a bundle can be made up consisting of the end portions 20 and 21 and the nine rib members 42. The bundle is approximately 3 feet long and approximately 6 inches wide and approximately 6 inches in depth, thereby causing the entire bundle to be extremely small for great ease of portability. This portablility is further enhanced when it is considered that the various leg portions and the rib members are fabricated from relatively thin but rigid aluminum tubing having a ¾ inch outer diameter so that the entire frame structure is extremely lightweight.

The cover 12 is assembled onto the frame 11 in the following manner: After three sets of rib sections each containing three rib members 42 have been assembled in the above described manner, each set is threaded through a sleeve on the cover 12. Thereafter the ends of each set of rib members are telescopically mounted on the ends of the counterpart pairs of leg portions.

The cover 12 may be made of a suitable plastic material which is highly tear resistant and which also has a very high tensile and bursting strength per unit weight. The cover may also be made of suitable woven material, if desired. In FIGURE 10 the manner of attaching cover 12 to the frame is shown. In this respect, it can be seen how sleeves 16, 17 and 18 terminate proximate struts 33 and 34. The same relationship is existent at the opposite end portion 21. After the sleeves have been mounted on the rib members and the latter on the leg portions, the opposite ends of the sleeves are threaded onto outer ends of the leg portions up to a point adjacent the struts. The ends of the cover 12 beyond the sleeves form flaps such as 56. A string 52 is attached to the end of flap 56 at 53 and this string is tied around pin 54 (FIGS. 9 and 3) which forms an extension of rivet 29. While only the end of cover 12 associated with end portion 20 has been shown, it will be appreciated that the same realtionship exists at the opposite end of cover 12 at end portion 21.

It will readily be seen that cover 12 may be completely removed from the frame and folded for ease of portability and further that the frame may be disassembled into a total of eleven parts, namely, nine rib members 42 and end portions 20 and 21. Furthermore, since the length of all of the members 42 and end portions 20 and 21 are the same, a very compact bundle may be obtained which is very light, considering the fact that lightweight aluminum tubing is used for the frame.

It is to be noted that plates 25 and 26 occupy a horizontal position in FIGURE 2. The linkage which includes the leg portions 22, 23 and 24, the latching struts 33 and 34 and the plates 25 and 26 may be shifted to cause the plate members 25 and 26 to assume a position at an angle to the ground. The exact position which these plates assume depends on the size of cover 12, which will control the amount that the upper series of rib members 42 and lower series of rib members 42 and lower series of rib members 42 can be spread apart.

In FIGURE 8 an alternate type of end portion is shown. Most parts of this end portion may be identical to end portion 20 described in detail above and therefore an additional description is deemed unnecessary. However, this end portion differs from that shown in the other figures by virtue of the fact that leg portion 23'' is continuous in

that it has an extension 55. It is this extension which may be impaled in the ground to stabilize the frame.

It can thus be seen that the improved portable shelter of the present invention is manifestly capable of achieving the above enumerated objects and while preferred embodiments of the present invention have been disclosed, it is to be understood that it is not limited thereto but may be otherwise embodied within the scope of the following claims.

I claim:

1. A frame for a portable shleter comprising first and second opposite ends, each end comprising a plate and at least three elongated legs having first and second ends, means pivotally coupling said first ends to said plate for permitting said second ends to occupy either a close collapsed, or an angularly spaced open relationship relative to each other, a spike coupled to a leg of each said end to permit said spikes to be driven into the ground or permitting said spikes to occupy a position parallel to said legs when said ends are collapsed, releasible means coupled to said legs for selectively retaining said legs in equally spaced angular relationship relative to each other, and at least six interchangeable ribs for coupling said ends together, said ribs being symmetrically curved and including coupling means at each end for mating with an adjacent rib or leg.

2. Apparatus according to claim 1 wherein said ends are connected by at least nine interchangeable curved ribs.

3. Apparatus according to claim 2 wherein said ribs telescopically join each other and the legs of said ends, and including a cover comprising a flexible sheet-like membrane having a plurality of sleeves therein for releasibly receiving said ribs.

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