This invention relates to portable beach umbrellas and the like and more particularly, to a portable combined beach umbrella and hammock structure.

It is an object of this invention to provide a novel beach umbrella structure, wherein the strength of the structure is maximized without the need for special materials.

Another object of this invention is to provide a novel beach umbrella and hammock structure which is readily collapsible for complete portability.

These and other objects of this invention will become more fully apparent with reference to the following specification and drawings which relate to several preferred embodiments of the invention.

In the drawings:

FIGURE 1 is a perspective view of the invention;
FIGURE 2 is a top plan view of the invention;
FIGURE 3 is a side elevation view of the invention;
FIGURE 4 is an end view of the invention;
FIGURE 5 is an enlarged detail view of a portion of the supporting structure of the invention;
FIGURE 6 is an enlarged detail of a hinge structure of the invention;
FIGURE 7 is an enlarged detail of one embodiment of a knock-down connector of the invention;
FIGURE 8 is an enlarged detail of another embodiment of a connector of the invention;
FIGURE 9 is a schematic view of the frame structure of the invention fully assembled;
FIGURE 10 is a schematic view of the frame structure of the invention in partially knocked-down condition; and
FIGURE 11 is a schematic view of the invention in its fully knocked-down portable condition.

Referring in detail to the drawings, and more particularly to FIGURES 1, 2, 3 and 4, the present invention is shown as comprising a fixed first frame portion 10 embedded in the ground 12 by first and second anchor means 14 and 16, respectively; a pivoted second frame portion 18 pivotedally mounted on said first frame portion 10 by first and second pivot means 20 and 22, respectively, located adjacent the said first and second anchor means 14 and 16, respectively; a unitary fabric web 24 peripherally suspended by a plurality of clews or sliding coupling means 26 coextensive with substantially the entire internal area defined by said frame portions; and an auxiliary support means 28 extending from the uppermost point on said fixed first frame portion 10 to a third anchor means 30 in the ground 12. A utility pocket 29, integral with the undersurface of the web 24, is provided for the purpose of holding personal articles or the like.

Both the fixed first frame portion 10 and the pivoted second frame portion 18 are constructed of aluminum tubing or the like which has been formed into a substantially parabolic planar shape. Thus, a saddle-shaped surface is generated by the web 24 when the first and second frame portions 10 and 18 are in the assembled position shown in FIGURES 1, 2, 3 and 4. This surface is classically known as a hyperbolic paraboloid, it being defined as a surface in which vertical transverse planes cut the surface in parabolas and in which horizontal planes cut the surface in hyperbolas.

Referring now to FIGURE 5, the auxiliary support means 28 is shown as comprising a hollow tube having a bifurcated cradle 32 at the upper end thereof. The cradle 32 includes a pair of semi-circular forks 34 and 36 which are adapted to supportably receive the first frame portion 10 on opposite sides of the knock-down coupling 38 thereon which is located at the center or apex thereof. A thumb nut 40 is provided at the lower end of the auxiliary support means 28 and extends through one wall thereof to provide a set screw adjustment for the position of the said support means 28 on the internally and telescopeably received land anchor 30.

The land anchor 30 is a wooden dowel or the like.

Referring back to FIGURE 2 and the fabric 24 is shown as having two peripheral portions 24a which are devoid of clews 26. These peripheral portions 24a are those portions which span the knockdown couplings 38. This construction materially enhances the strength of the structure of the invention and provides a maximum of comfort to a person reclining upon the upper surface of the fabric 24.

Referring now to FIGURE 6, the second pivot means 22 and the second land anchor 16 will now be described in detail. These are identical with the first pivot means 20 and the first land anchor 16.

The second land anchor 16 comprises a wooden dowel or the like which is telescopeably inserted within the open end 42 of the first frame portion 10, where it is secured by means of a wing-nut and through-bolt 44. As shown, a substantial length of the end of the frame portion 10 is enclosed in a reinforcing sleeve 45 which permits the use of the lightest possible materials in the tubes comprising the first frame portion 10.

The second pivot means 22 is shown to comprise an aluminum sleeve 46 externally telescopic at its inner end with respect to the end 48 of the second frame portion. The outer end of the sleeve 46 comprises a bifurcated section 50 which is adapted to straddle the first frame portion 10 and the sleeve 45 intermediate a pair of fixed upstanding studs or bosses 52 and 54, integral with the first frame portion 10, and extending through the sleeve 45, whereby the second pivot means 22 is prevented from moving along the first frame portion 10.

An adjustable guy-wire or cord 56 is provided between a fixed tie means 58 on the second frame portion 18 and a fixed ring 60 on the reinforcing sleeve 45 on the first frame portion 10 adjacent the open end 42 thereof. The guy-wire 56 is removably attached to the ring 60 by a snaphook 61 and will maintain the first and second frame members in the open or opposed position illustrated in FIGURES 1, 2, 3, 4 and 6 and 9.

Referring now to FIGURE 7, one embodiment of knock-down coupling 38 is shown as comprising a common sleeve member 62, open at both ends for internally and telescopeably receiving the ends 64 of the tubular making up the first frame portion 10, the couplings on the second frame portion 18 being identical.

A set screw 66 is provided, if desired, for securing the sleeve on one tube end 64 while a holding screw 68 is provided to substantially permanently maintain the sleeve 62 on the other of the tube ends 64.

In FIGURE 8, another embodiment of the knock-down coupling 38 is shown as comprising a one-way self-bracing hinge means 70 in which a first tube end 72 is laid open and provided with a pair of dependent ears 74 intermediate the ends of the laid-open section to form a semi-cylindrical brace which internally receives the end 76 of the other tube of the frame section. A hinge pin 78 is provided to join the tube ends 72 and 76 by penetrating both of the dependent ears 74 and extending diametrically through the tube end 76.
When fully assembled, as actually shown in FIGURE 1 and schematically shown in FIGURE 9, the force of gravity is sufficient to maintain the umbrella of the invention in an open condition since the pivoted second frame portion 18 always tends to fall towards the ground 12.

When it is desired to transport the umbrella to another place the pivoted second frame section 18 is first folded over into substantially co-planar engagement with the fixed first frame section 10, moving from the dotted line position to the solid line position of FIGURE 10.

The knock-down couplings 38, as previously illustrated and described with reference to FIGURES 7 and 8, are then either uncoupled or folded, respectively, and the tube sections comprising the first and second frame portions 10 and 18, respectively, are coextensively stacked as indicated by the solid line portion of FIGURE 11.

As also indicated in FIGURE 11, the fabric 24, still being on the frame portions 10 and 18, is wrapped around the stacked tube sections whereby the entire unit is made readily portable.

When the auxiliary support means 28 is in place, the upper surface of the fabric 24 may be utilized as a hammock, the point of attachment being away from the pivotal axis of the first and second pivot means 20 and 22.

The hyperbolic paraboloid generated by the fabric 24 when the first and second frame portions 10 and 18 are in the open position of FIGURES 1, 2, 3 and 4 provides an optimum strength for the entire structure, whereby even extremely heavy persons may safely lounge upon the upper surface thereof, the clews 26 acting to evenly distribute the load about those peripheral portions of the first and second frame members 10 and 18 which are coextensive with the fabric 24. Thus, the use of lightweight tubing for fabricating the frame portions is permitted, providing greater portability of the invention.

Additionally, the use of the invention as an umbrella is very efficient since the shaded area beneath the umbrella is optimized by its shape.

If desired, the fixed first frame portion 10 may be maintained parallel with the ground and the pivoted second frame portion 18 will then make a larger acute angle with the ground 12, thus providing a cabana style shelter.

The invention provides a new and novel combined beach umbrella and hammock which is characterized by optimum strength with the lightest of materials, whereby the device is readily portable.

It is to be understood that the embodiments of the invention shown and described herein are for the purpose of example only and are not intended to limit the scope of the appended claims.

What is claimed is:

1. A foldable combined umbrella and couch comprising a first frame means, a second frame means pivotally mounted with respect to said first frame means, said first and second frame means each having a periiphery defining a curvilinear span and adapted to be relatively movable from a flush coextensive position to an open substantially opposed position, and a unitary fabric web substantially coextensive with and peripherally secured to said first and second frame means, said fabric web subtending and being free of the periphery of said first and second frame means at the vertex of each of said curvilinear spans defined thereby.

2. The invention defined in claim 1, wherein said first and second frame means each comprise a single curvilinear span including first and second end portions on either side of the vertex of the said curvilinear span and coupling means at said vertex for integrating said first and second end portions into the said single curvilinear span.

3. The invention defined in claim 1, wherein said first frame means includes land anchor means at both ends of the span defined thereby.

4. A combined umbrella and flexible couch means with an upper saddle-shaped surface comprising a first frame means, a second frame means pivotally mounted with respect to said first frame means, said first and second frame means each having a periiphery defining a curvilinear span and adapted to be relatively movable from a flush coextensive position to an open substantially opposed position, and a unitary fabric web mutually coextensive with and peripherally secured to said first and second frame means, means for fixing said first and second frame means on a mounting surface, and adjustable support means extending from said mounting surface into engagement with the uppermost portion of said first frame means at the vertex thereof.

5. The invention defined in claim 4, wherein said fabric web subtends and is free of the periphery of said first and second frame means at the vertex of each of said curvilinear spans defined thereby.

6. The invention defined in claim 4, wherein said support means comprises a bifurcated cradle engaging said first frame means substantially at the vertex thereof, an integral brace dependent from said cradle and land anchor means dependent from said stem and adapted to engage said mounting surface.

7. The invention defined in claim 4, wherein said first and second frame means each comprise a single curvilinear span.

8. The invention defined in claim 4, wherein said first and second frame members each comprise a single curvilinear span including first and second end portions on either side of the vertex of the said curvilinear span and coupling means at said vertex for integrating said first and second end portions into the said single curvilinear span.

9. The invention defined in claim 4, wherein said means for fixing said first frame means comprises land anchor means at both ends of the span defined by said first frame means.

10. The invention defined in claim 4, wherein said second frame means includes pivot means at both ends of the span defined thereby, said pivot means being adapted to releasably engage the periphery of said first frame means.

11. The invention defined in claim 4, wherein said means for fixing said first frame means comprises land anchor means at both ends of the span defined by said first frame means, and further, wherein said second frame means includes pivot means at both ends thereof, said pivot means being releasably engaged and adapted to releasably engage said first frame means adjacent said land anchor means.

12. The invention defined in claim 11, wherein said first frame means comprises a unitary tubular means, said land anchor means being telecopically and internally engageable with the ends of said tubular means, and a reinforcing sleeve on each end of said tubular means; and wherein said second frame means includes pivot means at both ends thereof, said pivot means each comprising bifurcated extensions of said frame means and each being adapted to straddle one of said reinforcing sleeves on said first frame means.

13. The invention defined in claim 11, wherein said first frame means comprises a unitary tubular means, said land anchor means being telescopically and internally engageable with the ends of said tubular means, and a reinforcing sleeve on each end of said tubular means; and wherein said second frame means includes pivot means at both ends thereof, said pivot means each comprising bifurcated extensions of said frame means, said each being adapted to straddle one of said reinforcing sleeves on said first frame means, said reinforcing sleeves each including retaining means, said retaining means being engageable
with said pivot means to maintain said pivot means in position on said first frame means.

14. A foldable combined umbrella and couch comprising a first frame means, a second frame means pivotally mounted with respect to said first frame means, said first and second frame means each having a periphery defining a curvilinear span and adapted to be relatively movable from a flush coextensive position to an open substantially opposed position, and a unitary fabric web mutually coextensive with and peripherally secured to said first and second frame means; said second frame means including pivot means at both ends of the span defined thereby, said pivot means being adapted to releasably engage the periphery of said first frame means.

15. A foldable combined umbrella and couch comprising a first frame means, a second frame means pivotally mounted with respect to said first frame means, said first and second frame means each having a periphery defining a curvilinear span and adapted to be relatively movable from a flush coextensive position to an open substantially opposed position, and a unitary fabric web mutually coextensive with and peripherally secured to said first and second frame means; said first frame means including land anchor means at both ends of the span defined thereby and said second frame means including pivot means at both ends of the span defined thereby said pivot means being adapted to releasably engage said first frame means adjacent said land anchor means.

16. A foldable combined umbrella and couch comprising a first frame means, a second frame means pivotally mounted with respect to said first frame means, said first and second frame means each having a periphery defining a curvilinear span and adapted to be relatively movable from a flush coextensive position to an open substantially opposed position, and a unitary fabric web mutually coextensive with and peripherally secured to said first and second frame means; said first frame means comprising a unitary tubular means including land anchor means, said land anchor means being telescopically and internally engageable with the said ends of said tubular means, and a reinforcing sleeve on each end of said tubular means; and said second frame means including pivot means at both ends thereof, said pivot means each comprising bifurcated coextensions of said frame means and each being adapted to straddle one of said reinforcing sleeves on said first frame means.

17. A foldable combined umbrella and couch comprising a first frame means, a second frame means pivotally mounted with respect to said first frame means, said first and second frame means each having a periphery defining a curvilinear span and adapted to be relatively movable from a flush coextensive position to an open substantially opposed position, and a unitary fabric web mutually coextensive with and peripherally secured to said first and second frame means; said first frame means comprising a unitary tubular means including land anchor means, said land anchor means being telescopically and internally engageable with the said ends of said tubular means, and a reinforcing sleeve on each end of said tubular means; and said second frame means comprising a unitary tubular means including land anchor means, said land anchor means being telescopically and internally engageable with the said ends of said tubular means, and a reinforcing sleeve on each end of said tubular means; and said second frame means including pivot means at both ends thereof, said pivot means each comprising bifurcated coextensions of said frame means and each being adapted to straddle one of said reinforcing sleeves on said first frame means, said reinforcing sleeves each including retaining means, said retaining means being engageable with said pivot means to maintain said pivot means in position on said first frame means.

18. A foldable combined umbrella and couch comprising a first frame means, a second frame means pivotally mounted with respect to said first frame means, said first and second frame means each having a periphery defining a curvilinear span and adapted to be relatively movable from a flush coextensive position to an open substantially opposed position, and a unitary fabric web mutually coextensive with and peripherally secured to said first and second frame means; said first frame means including land anchor means at both ends of the span defined thereby; and said second frame means including pivot means at both ends of the span defined thereby said pivot means being adapted to releasably engage said first frame means adjacent said land anchor means; and guy wire means releasably secured to said first frame means each adjacent of said land anchor means and secured to said second frame means adjacent each of said pivot means, whereby said first and second frame means are retained in said open position.

References Cited by the Examiner

UNITED STATES PATENTS

2,927,984 1/1963 Kapp 135—7.1
2,928,360 3/1960 Heine 135—7.1 X
2,961,802 11/1960 Mongan et al. 50—52
2,963,031 12/1960 Carroll 135—5
3,004,623 10/1961 Nissen 5—111
3,031,688 5/1962 Southwood 5—120
3,070,107 12/1962 Beatty 135—5

FOREIGN PATENTS

373,984 4/1907 France.

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