IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF GEORGIA
AUGUSTA DIVISION

SOLBELLO, INC.,	)	
	)	
Plaintiff,	)	
	)	CIVIL ACTION FILE NO.:
v.	)	
	)	
SHORESHADE LLC,	)	
	)	
Defendant.	)	

VERIFIED COMPLAINT
[JURY TRIAL DEMANDED]

Plaintiff Solbello, Inc. ("Solbello"), complaining of Defendant ShoreShade LLC ("ShoreShade"), says and alleges as follows:

1. Defendant ShoreShade has unlawfully copied Solbello's patented sunshade invention. Solbello brings this action to, among other things: stop ShoreShade's infringement; vindicate its patent rights; prevent further irreparable harm; and ensure that consumers are no longer duped into thinking that ShoreShade's inferior copy is Solbello's patented product.

PARTIES, JURISDICTION, AND VENUE

2. Solbello is, and at all relevant times has been, a corporation organized and existing pursuant to the laws of the State of North Carolina, and having a principal place of business in Wrightsville Beach (New Hanover County), North Carolina.

3. Upon information and belief, ShoreShade, LLC is, and at all relevant times has been, a limited liability corporation organized and existing under the laws

of the State of Georgia, and having a principal place of business in Evans, (Columbia County), Georgia.

4. Upon information and belief, ShoreShade is, and at all relevant times has been, doing business in (among other places) the Augusta Division of this District.

5. This Court has jurisdiction pursuant to 28 U.S.C. §§ 1331 and 1338 because this action arises under the Patent Laws of the United States, including 35 U.S.C. § 1 *et seq*.

6. Venue is proper in the Augusta Division of this District pursuant to 28 U.S.C. §§ 1391 and 1400 and under Local Rule 2.1(a) and (d).

FACTUAL BACKGROUND

A. Paul James and Danny Gillis Found Solbello and Develop the Solbello Shade.

7. Solbello is a small business originally founded in 2019 by avid beach goer Paul James. Paul started Solbello with a mission to design a dependable beach shade for families that sets up quickly, is safe, easy to transport, and won't blow down the beach. Paul, along with his two young sons, spent years testing and developing his design and idea. Eventually, they completed the final product known as the Solbello Shade.

8. Danny Gillis partnered with Paul shortly thereafter to help launch Solbello's product and build its brand.

9. Today, Solbello manufactures its Solbello Shade and sells it throughout the United States. The Solbello Shade has gained recognition for its utility, thoughtful design, high quality materials, and distinctive overall appearance through

its website (solbello.com), Amazon.com, and at select retail locations throughout the United States, including at locations in Georgia and in North Carolina.

10. Several features in particular set the Solbello Shade apart from competitor products. For instance, its simple design allows for quicker setup than most competing sunshades. And its innovative structure makes it more stable on windy days, because it automatically adjusts to the wind.

11. Solbello is also the only complete umbrella system to meet the American Society for Testing and Materials ("ASTM") F3681-24 consumer safety standard—a benchmark, endorsed by the Consumer Product Safety Commission ("CPSC"), that sets performance requirements to prevent beach umbrellas and anchors from detaching from the sand. Indeed, Paul, on behalf of Solbello, spent years serving on an ASTM committee and working with the CPSC to help develop this standard.

12. Solbello has been manufacturing and selling Shades that utilize its unique invention and design since 2020 online and in select retail stores throughout the United States. Solbello has invested significant time, money, and effort in promoting the Solbello Shade.

13. Examples of the Solbello Shade, both set up and collapsed, are depicted below:




SOLBELLO

B. Paul James and Danny Gillis Patent Their Intellectual Property.

14. Paul and Danny also set out to protect their designs and intellectual property. Solbello has undertaken these efforts (and all others) to protect its intellectual property rights, to protect Solbello's reputation, and to protect its consumers from confusion in the marketplace.

The '211 and Design Patents

15. On March 7, 2023, the United States Patent and Trademark Office ("USPTO") issued a utility patent bearing U.S. Patent No. 11,596,211 (the "'211 Patent") and titled "Self-Adjusting Sun Shade Assembly."

16. Prior to issuance, all right, title and interest in and to the '211 Patent was assigned to Solbello, and the assignment is on record with the USPTO. At all relevant times, Solbello was the owner of all right, title and interest in and to the '211 Patent.

17. A true and accurate copy of the '211 Patent is attached hereto as **Exhibit A**.

18. Solbello never licensed, permitted, or authorized Defendant, or any other party or person, to practice the invention of the '211 Patent to make, use, offer to sell, or sell any self-adjusting sunshade products within the United States, or to import any self-adjusting sunshade products, or components constituting a material part thereof, into the United States.

19. Solbello also owns Design Patent D998,739 (the "Design Patent") which issued from the USPTO on September 12, 2023.

The ’606 Patent

20. On September 12, 2023, Solbello applied to have the ’211 Patent reissued with claims that more properly covered the full extent of its innovative Shade.

21. From September 12, 2023, through September 30, 2025, Solbello was engaged in the prosecution of that application to have the ’211 Patent reissued.

22. On September 30, 2025, the USPTO reissued the ’211 Patent bearing U.S. Patent No. RE50606 E (the “’606 Patent”) and titled “Self-Adjusting Sun Shade Assembly.”

23. Prior to issuance, all right, title and interest in and to the ’606 Patent was assigned to Solbello, and the assignment is on record with the USPTO. Solbello is the current owner of all right, title and interest in and to the ’606 Patent.

24. A true and accurate copy of the ’606 Patent is attached hereto as **Exhibit B**.

25. The ’606 Patent is valid and enforceable.

26. Solbello has never licensed, permitted, or authorized Defendant, or any other party or person, to practice the invention of the ’606 Patent to make, use, offer to sell, or sell any self-adjusting sunshade products within the United States, or to import any self-adjusting sunshade products, or component constituting a material part thereof, into the United States.

27. No court or administrative body has invalidated any claim of the ’606 Patent.

28. The ’606 Patent has not expired.

29. Solbello makes, distributes, offers to sell, and sells products, including the Solbello Shade, that incorporate its intellectual property, including the inventions that are claimed in the '606 Patents.

30. Solbello has marked the covered products in accordance with 35 U.S.C. § 287.

C. ShoreShade Copies the Solbello Shade.

31. Upon information and belief, Defendant saw the ingenuity of Solbello's innovation and sought to copy those innovations in an effort to unfairly compete with Solbello and infringe its patent.

32. On December 1, 2022, through its owner and registered agent, Shawn Carnes, Defendant purchased a Solbello Shade from Solbello's website.

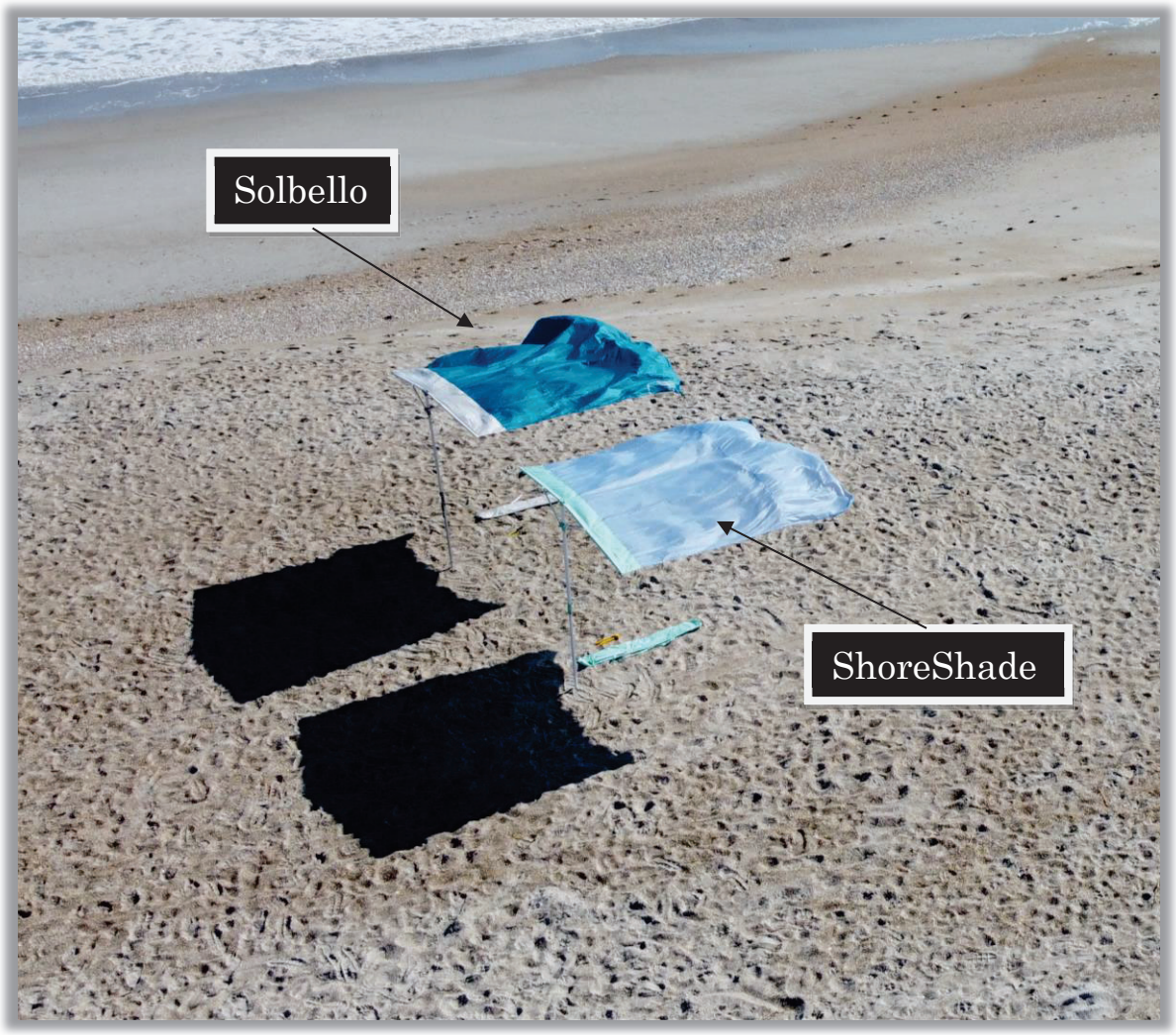
33. Solbello uses Shopify to receive and fulfill orders on its website. A true and accurate copy of the Shopify order confirmation received by Solbello reflecting Defendant's order is attached hereto as **Exhibit C**.

34. Defendant had its Solbello Shade delivered to 1023 Redbird Road in Augusta, Georgia.

35. Upon information and belief, Defendant used its newly purchased Solbello Shade to provide design, measurement, material, and other instructions to its manufacturer(s).

36. Upon information and belief, Defendant requested that its manufacturer(s) in China copy, mirror, follow, and/or replicate the Solbello Shade's design, measurements, and materials to create a copycat product it now manufactures, sells, and calls the ShoreShade.

37. As shown in the side-by-side comparisons below, Defendant's assembled ShoreShade is a substantially identical copy of the assembled Solbello Shade:





38. Upon information and belief, apart from the attachable cupholder included with Defendant's ShoreShade, the Solbello Shade and Defendant's ShoreShade have ***exactly the same number of parts to be put together in an almost identical manner.***

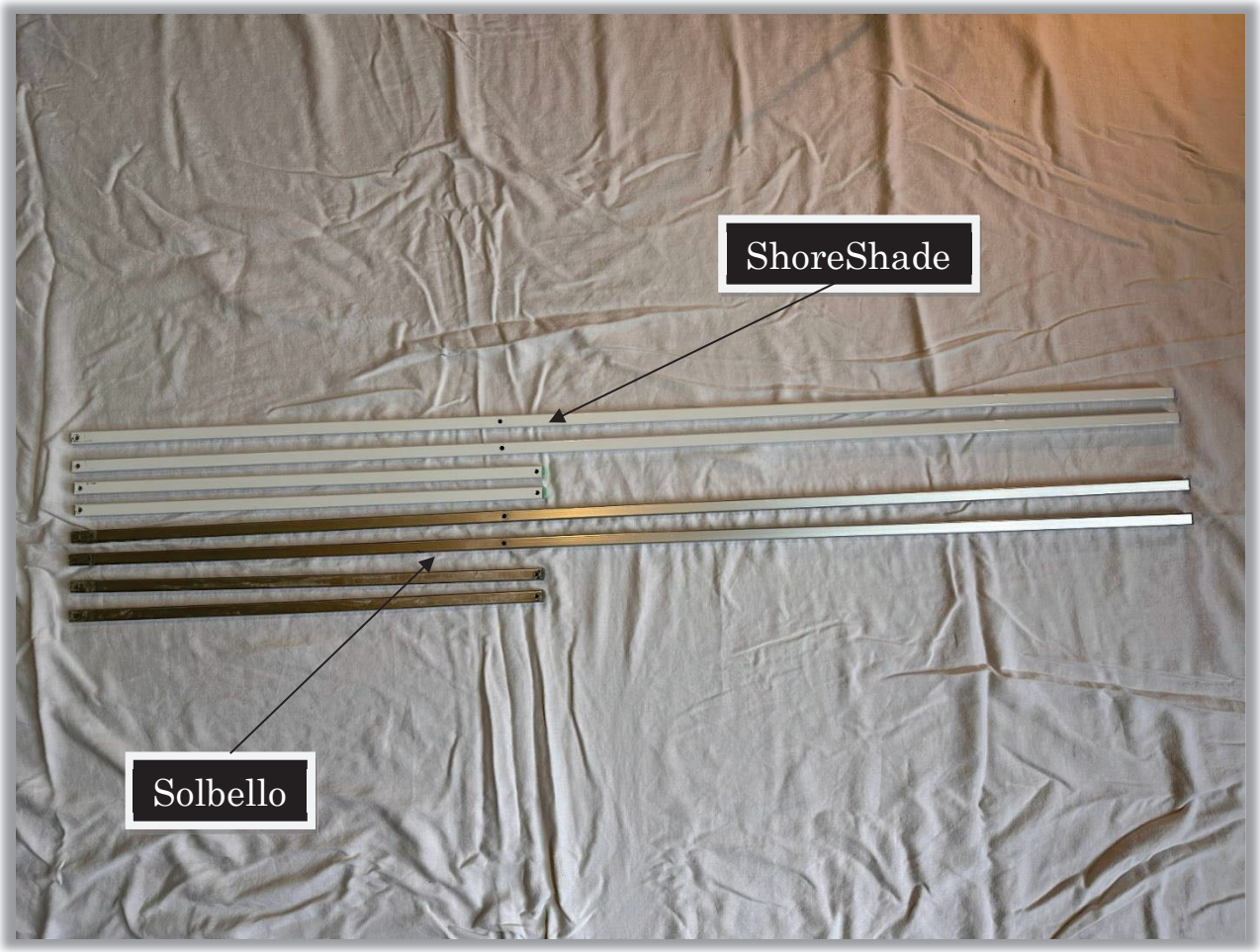
39. As shown in the side-by-side comparisons below, Defendant's unassembled ShoreShade is a nearly identical copy of the unassembled Solbello Shade:



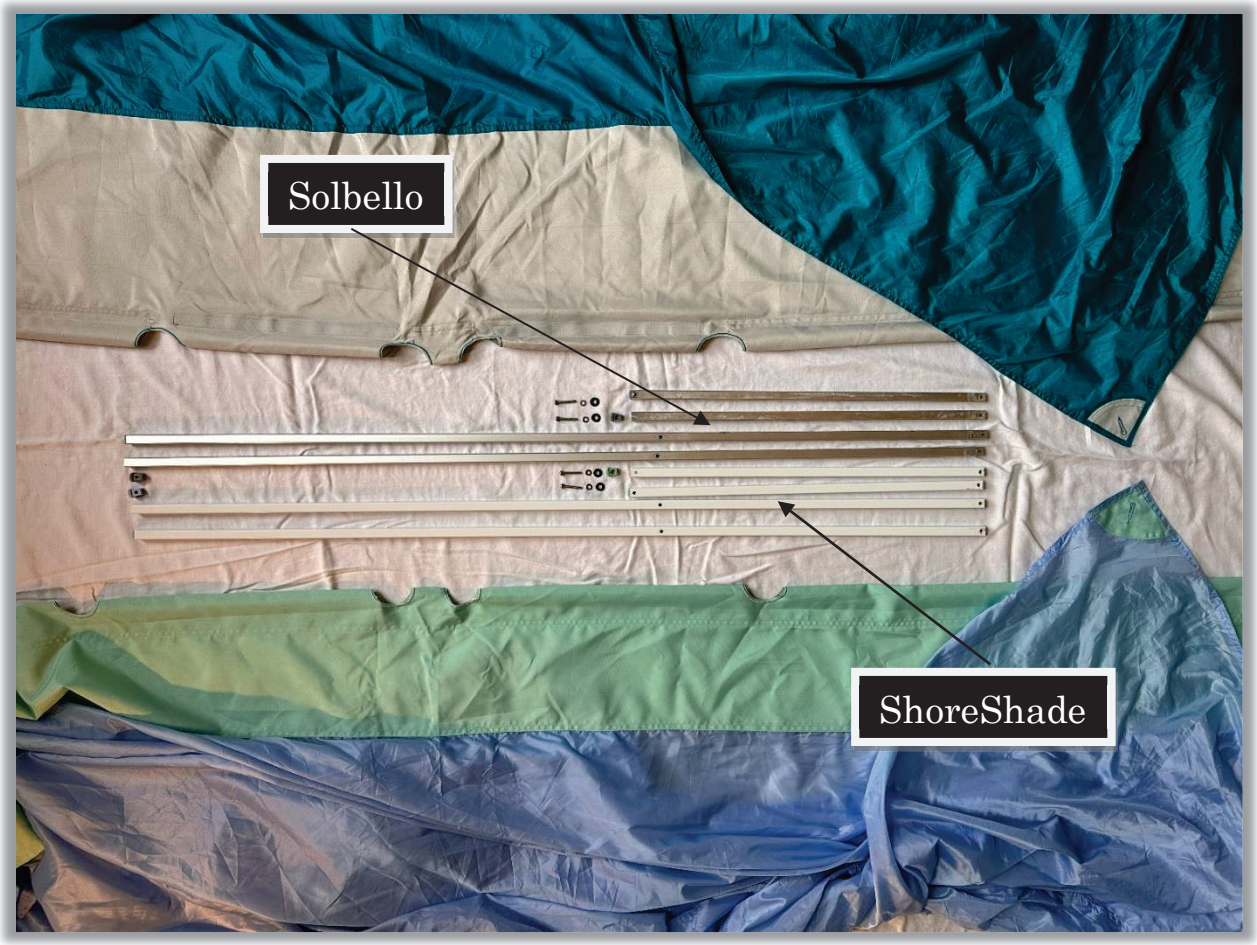
40. Upon information and belief, the bag used to house Defendant's ShoreShade is the same exact size and shape as the bag used to house the Solbello Shade. Additionally, Defendant's ShoreShade comes with the exact same number of yellow colored ground stakes as the Solbello Shade. The side-by-side comparison below demonstrates the identical nature of each products' bag and ground stakes:



41. Defendant's ShoreShade contains the same number of "ribs" and "arms" supplied in a Solbello Shade kit. Upon information and belief, Defendant's ShoreShade ribs and arms are identical in measurement, shape, and even screw position as those provided in the Solbello Shade kit. The side-by-side comparison below demonstrates the identical nature of each products' ribs and arms:



42. Defendant's ShoreShade contains the same number of hardware pieces, including rubber washers, stainless washers, screws, and nuts, as those supplied in a Solbello Shade kit. Upon information and belief, Defendant's ShoreShade hardware pieces are identical in measurement and shape as those provided in the Solbello Shade kit. The side-by-side comparison below demonstrates the identical nature of each products' hardware pieces:



43. Upon information and belief, Defendant's ShoreShade contains a sail that is identical to the one supplied in a Solbello Shade kit. Upon information and belief, the Defendant's ShoreShade sail is identical in size, stitching, embroidery, and corners with buttons as the one provided in the Solbello Shade kit.

44. Upon information and belief, after unlawfully copying the Solbello Shade, Defendant began selling its nearly identical ShoreShade in or around 2023 on its website at https://shoreshadesails.com/ and on Amazon. Despite having copied Solbello's ingenuity, ShoreShade advertises its product as "revolutionary." A true and

accurate screenshot from Solbello's website depicting that language is attached hereto as **Exhibit D.**

45. Defendant has, upon information and belief, imported, used, made, manufactured, distributed, sold, and/or offered to sell the ShoreShade in the United States, including within the states of Georgia and North Carolina and within this District.

46. Despite ordering a Solbello Shade to copy in nearly identical form, consumers have informed Solbello that Defendant has told those consumers that it has "no idea" about Solbello.

D. The ShoreShade Infringes the '606 Patent.

47. Defendant makes, uses, offers to sell, sells, imports, promotes, supplies, distributes, and/or designs its ShoreShade and/or imports components constituting a material part of the ShoreShade that infringe the '606 Patent (the "Infringing Product").

48. With the Infringing Product, Defendant has copied, without authority, Solbello's design as disclosed and claimed in the '606 Patent. In doing so, Defendant has gained an unfair commercial advantage by piggybacking off of Solbello's inventions, designs, reputation and goodwill in relation to self-adjusting sun shade products.

49. Upon information and belief, Defendant makes, uses, offers to sell, sells, imports, promotes, supplies, distributes, and/or designs the Infringing Product and/or

imports components constituting a material part of the Infringing Product. Defendant advertises the Infringing Product on its website.

50. Defendant sells and/or offers to sell the Infringing Product to and/or through, for example, https://shoreshadesails.com/, among many other locations.

51. Solbello is informed and believes that Defendant actively has been offering to sell, selling, importing, promoting, supplying, and/or distributing the Infringing Product to customers and potential customers in Georgia and North Carolina.

52. Defendant's Infringing Product is covered by and infringes the claims of the '606 Patent, including, but not limited to, at least each and every element of claim 44 either literally or under the doctrine of equivalents.

53. Claim 44 of the '606 Patent recites:

> A sun shade assembly comprising:
> a mast configured to extend upwardly from a supporting surface, and having a top end and a bottom end;
> at least one rib located proximate the top end of said mast, and configured to rotate relative to the supporting surface;
> a sail having a proximal edge secured to said rib and an unrestrained free edge adapted to unfurl in response to blowing of the wind, and wherein an entire surface area of said sail is unrestrained from the proximal edge to the free edge; and
> when unfurled, said sail and rib are adapted to rotate together to a direction of the blowing wind.

54. Defendant's ShoreShade either literally or equivalently is a "sun shade assembly[.]"

55. Defendant's ShoreShade either literally or equivalently contains "a mast configured to extent upwardly from a supporting surface, and having a top end and a bottom end[.]"

56. Defendant's ShoreShade either literally or equivalently contains "at least one rib located proximate the top end of said mast[.]"

57. Defendant's ShoreShade either literally or equivalently contains a rib "configured to rotate relative to the supporting surface[.]"

58. Defendant's ShoreShade either literally or equivalently contains "a sail having a proximal edge secured to said rib and an unrestrained free edge adapted to unfurl in response to blowing of the wind[.]"

59. Defendant's ShoreShade either literally or equivalently comprises "an entire surface area of said sail is unrestrained from the proximal edge to the free edge[.]"

60. Defendant's ShoreShade either literally or equivalently comprises a system that "when unfurled, said sail and rib are adapted to rotate together to a direction of the blowing wind[.]"

61. To the extent ShoreShade would try to point to any differences between its product and claim 44, those would be insubstantial.

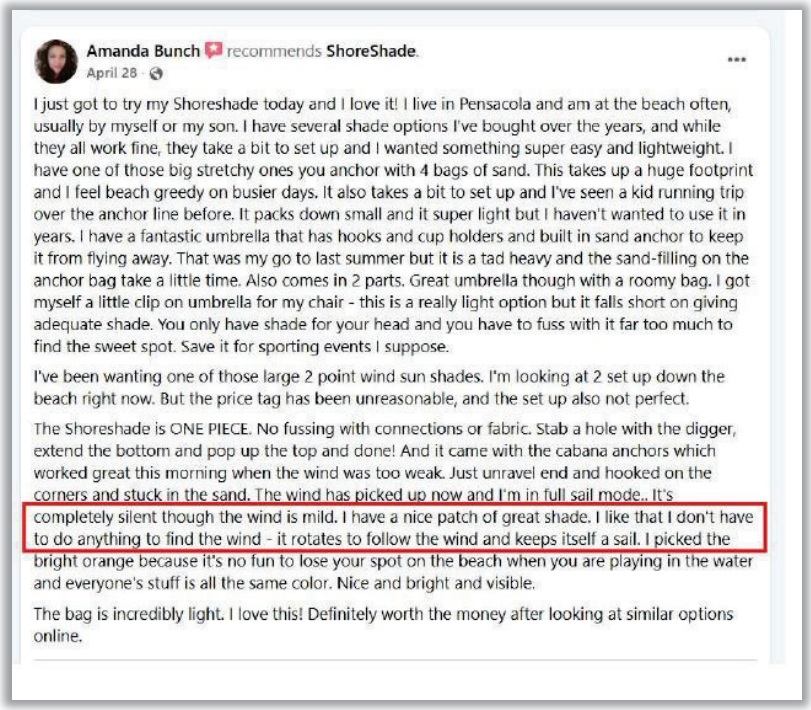
62. The ShoreShade, and each of its elements, performs substantially the same function in substantially the same way to achieve the same result as the Solbello Shade. Both products are vertical sunshades with horizontal ribs that unfold to release a billowing sail, and which rotate to align with the wind.

63. A claim chart and incorporated Facebook reviews demonstrating Defendant's infringement of claim 44, attached hereto as **Exhibit E**, is reproduced below.

U.S. PATENT NO. RE50606 - CLAIM 44	
Claim Language	*Shoreshade Product*
A sun shade assembly	 Shoreshade Facebook Page
a mast configured to extend upwardly from a supporting surface, and having a top end and a bottom end	 Mast extending upwardly from the beach ("supporting surface")

at least one rib located proximate the top end of said mast	Ribs located at the top end of the Mast 
[said rib] configured to rotate relative to the supporting surface	Rib rotates relative to the beach to allow sail to adjust to the direction of the wind  ***See attached Facebook reviews

a sail having a proximal edge secured to said rib and an unrestrained free edge adapted to unfurl in response to blowing of the wind	Proximal edge of sail is secured to the rib while free edge of sail is unrestrained  Free edge of sail unfurls in the wind
and wherein an entire surface area of said sail is unrestrained from the proximal edge to the free edge	No restraining structure between proximal and free edges of the sail 
when unfurled, said sail and rib are adapted to rotate together to a direction of the blowing wind	***See attached Facebook reviews Sail and rib rotate to a direction of the wind



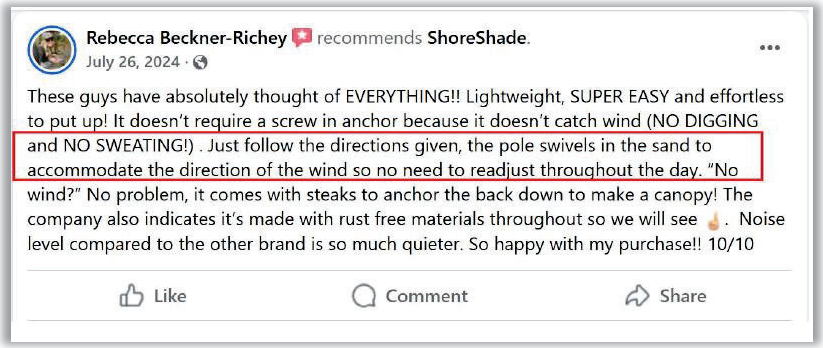
Amanda Bunch recommends **ShoreShade**.
April 28 ·

I just got to try my Shoreshade today and I love it! I live in Pensacola and am at the beach often, usually by myself or my son. I have several shade options I've bought over the years, and while they all work fine, they take a bit to set up and I wanted something super easy and lightweight. I have one of those big stretchy ones you anchor with 4 bags of sand. This takes up a huge footprint and I feel beach greedy on busier days. It also takes a bit to set up and I've seen a kid running trip over the anchor line before. It packs down small and it super light but I haven't wanted to use it in years. I have a fantastic umbrella that has hooks and cup holders and built in sand anchor to keep it from flying away. That was my go to last summer but it is a tad heavy and the sand-filling on the anchor bag take a little time. Also comes in 2 parts. Great umbrella though with a roomy bag. I got myself a little clip on umbrella for my chair - this is a really light option but it falls short on giving adequate shade. You only have shade for your head and you have to fuss with it far too much to find the sweet spot. Save it for sporting events I suppose.

I've been wanting one of those large 2 point wind sun shades. I'm looking at 2 set up down the beach right now. But the price tag has been unreasonable, and the set up also not perfect.

The Shoreshade is ONE PIECE. No fussing with connections or fabric. Stab a hole with the digger, extend the bottom and pop up the top and done! And it came with the cabana anchors which worked great this morning when the wind was too weak. Just unravel end and hooked on the corners and stuck in the sand. The wind has picked up now and I'm in full sail mode.. It's completely silent though the wind is mild. I have a nice patch of great shade. I like that I don't have to do anything to find the wind - it rotates to follow the wind and keeps itself a sail. I picked the bright orange because it's no fun to lose your spot on the beach when you are playing in the water and everyone's stuff is all the same color. Nice and bright and visible.

The bag is incredibly light. I love this! Definitely worth the money after looking at similar options online.



Rebecca Beckner-Richey recommends **ShoreShade**.
July 26, 2024 ·

These guys have absolutely thought of EVERYTHING!! Lightweight, SUPER EASY and effortless to put up! It doesn't require a screw in anchor because it doesn't catch wind (NO DIGGING and NO SWEATING!) . Just follow the directions given, the pole swivels in the sand to accommodate the direction of the wind so no need to readjust throughout the day. "No wind?" No problem, it comes with steaks to anchor the back down to make a canopy! The company also indicates it's made with rust free materials throughout so we will see 🤞. Noise level compared to the other brand is so much quieter. So happy with my purchase!! 10/10

Like Comment Share



Randy Belk recommends **ShoreShade**.
June 12, 2024 ·

Bought ours a few weeks ago and it is amazing. Set up is super easy and I love that it automatically adjust to the wind direction. Sitting under it right now as I type this review.

E. ShoreShade's Product Is Inferior to Solbello's.

64. Despite copying Solbello's intellectual property, the ShoreShade is inferior in quality to the Solbello Shade.

65. The Solbello Shade is designed with durable long-lasting materials such that testing has demonstrated it can withstand winds upward of 65 miles per hour.

66. Upon information and belief, Defendant's ShoreShade is made from less durable and long-lasting materials than the Solbello Shade.

67. Upon information and belief, Defendant's ShoreShade cannot withstand the same windspeeds and conditions that the Solbello Shade is built to endure.

68. Upon information and belief, Defendant's ShoreShade has broken or failed to properly work under windspeeds and conditions where the Solbello Shade would have operated as designed and advertised.

F. Consumers and Other Businesses Have Been Confused Into Believing the ShoreShade is Solbello's Product.

69. Confusion amongst consumers has arisen, and is likely to continue in the future, based on similarities between Defendant's product and Solbello's, including without limitation the identical or nearly identical part configurations, color combinations, and product packaging.

70. Confusion has also arisen and is likely to continue considering that Defendant's ShoreShade and the Solbello Shade are of the same type and sold through the same channels of trade. Confusion has arisen and is likely to continue

due to other factors as well, including Defendant's intent to copy and a consideration of the degree of care expected from consumers for modestly priced items.

71. Furthermore, in addition to having a nearly identical product, Defendant's sales techniques for its ShoreShade are extremely similar to the advertising for and promotion of the Solbello Shade.

72. As a preliminary matter, Defendant's product name—the ShoreShade—utilizes very similar alliteration unique to the Solbello Shade name.

73. Furthermore, Defendant's website claims that the company was founded by "two lifelong friends who sought to make outdoor vacations and trips to the beach easier than ever." Similarly, Solbello's website details that it was "started by two avid beach goers from Wrightsville Beach looking to make going to the beach safer and more enjoyable."

74. By way of additional example, as noted above, the Solbello Shade includes bungee cord lines and yellow ground stakes that can be used to secure the sail in place by connecting it to the ground. Solbello refers to this aspect of its Solbello Shade as a "No-Wind Kit" that can be used for "the rare, calm no wind beach days[.]" A true and accurate screenshot from Solbello's website depicting that language is attached hereto as **Exhibit F.**

75. On its Amazon storefront, Defendant also refers to the nearly identical yellow ground stakes and bungee lines copied in its product as a "no wind kit." A true

and accurate screenshot from Defendant's Amazon storefront with the identical "no wind kit" language is attached hereto as **Exhibit G.**

76. Upon information and belief, Defendant advertises in a similar manner to Solbello to intentionally confuse consumers and piggyback off of Solbello's notoriety in the marketplace.

77. Defendant's efforts to confuse consumers and piggyback off of Solbello's notoriety have converted customers into purchasing its inferior product. Upon information and belief, Defendant's efforts will result in continued conversion of consumers to purchase Defendant's product in lieu of purchasing the Solbello Shade.

78. The poor performance of Defendant's ShoreShade has led mistaken potential consumers to believe that Solbello's product is made from inferior materials and not able to withstand the very weather conditions for which it was designed and created.

79. Potential consumers have reported these sightings or experiences to Solbello under the impression that the underperforming product came from Solbello instead of Defendant.

80. For example, some consumers who have purchased Defendant's ShoreShade have mistakenly left reviews on the Solbello website or Amazon page believing the product they saw or purchased is/was the Solbello Shade.

81. In one instance, a confused consumer left a one-star review on Solbello's Amazon storefront stating: "BUYER BEWARE! Purchased this shade and was DISAPPOINTED in the poor performance. Concept is there but reality is very

different. Can't even adequately use if there are inconsistent / low winds. Returned it and got a shocking $8 back!? Would not recommend unless you enjoy risking your money." This confused consumer had, apparently, purchased both Defendant's ShoreShade and a Solbello Shade. The confused consumer then attempted to (and did, in fact) return Defendant's ShoreShade to Solbello, kept the superior Solbello Shade, and left a negative review about the ShoreShade on *Solbello's* Amazon listing. A true and accurate screenshot of this Amazon review is attached hereto as **Exhibit H.**

82. The damage was already past repair when the confused consumer left such a negative one-star review on Solbello's Amazon page.

83. Upon information and belief, the confused customer's one-star review deterred other potential customers from purchasing a Solbello Shade and drove them to other retailers or competing products when they would've purchased a Solbello Shade.

84. Upon information and belief, this confused consumer is one of many who have purchased Defendant's ShoreShade mistakenly believing it to be associated with or a version of the Solbello Shade.

85. In other instances, consumers have commented on Solbello's social media platforms with photos of Defendant's ShoreShade believing it to be a Solbello product.

86. By way of another example, an individual commented on a video posted on Solbello's Facebook page: "I saw one this weekend among the Shabumis [another

brand of sunshade], cabanas and tents and I wish I had taken a picture, but the guy finally just tore it down and up and I didn't see him again…it was bent every which way and contorted the wind pulverized it….***I was not impressed.***" (emphasis added). Solbello reached out to that individual, who reported that he had seen a cupholder on the shade—confirming, in other words, that the product had been a ShoreShade and not a Solbello Shade. A true and accurate screenshot of this Facebook comment is attached hereto as **Exhibit I**.

87. Another customer commented on one of Solbello's Facebook posts: "Just set mine up." The customer, however, attached a photograph of a ShoreShade, not a Solbello Shade. A true and accurate screenshot of this Facebook comment is attached hereto as **Exhibit J**.

88. Still other customers have messaged Solbello directly to complain about Defendant's ShoreShade product believing it to be a Solbello Shade.

89. For instance, one customer reached out to Solbello via its online contact form, complaining that her sunshade would not stand up unless she placed weight at its base, and that the shade's telescoping pole would not lock into place. Yet again, Solbello confirmed that that customer had purchased a ShoreShade, not a Solbello Shade. A true and accurate copy of this correspondence is attached hereto as **Exhibit K**.

90. Not only have *consumers* been confused—so have other businesses. In 2024, for instance, a brand-campaign company emailed Solbello about a potential partnership. But the employee's message referred to the company interchangeably as

"Solbello" and "ShoreShade," suggesting the employee thought they were one and the same. A true and accurate copy of this correspondence is attached hereto as **Exhibit L**.

91. Upon information and belief, Defendant's infringing actions have the intent and effect of deceiving the public into believing that its ShoreShade is associated with, sponsored by, or approved by Solbello, when they are not.

92. As a result of Defendant's actions to copy the Solbello Shade and unfairly compete, Solbello has suffered price erosion. Defendant currently sells its knockoff ShoreShade for just $129, and has previously listed it for sale at $99. To stay competitive amidst that unlawful imitation, Solbello was forced to cut the price of its Shade from $179, at which it had priced its product as recently as May 2024, down to $150.

93. Consumers have taken notice of this price disparity.

94. For example, on one of Solbello's Facebook posts depicting its product, one individual commented: "This looks like the Shoreshade sail without the cup holders. The Shoreshade is less expensive." A true and accurate screenshot of this Facebook comment is attached hereto as **Exhibit M**.

95. By way of another example, one consumer contacted Solbello on Facebook, stating: "I really wanted to buy your product, but it was cost prohibitive for me so I bought a Shore Shade instead. I'm really not happy with it and was wondering if you ever had a coupon where I could buy your product for a similar cost?"

A true and accurate screenshot of this correspondence is attached hereto as **Exhibit N**.

G. ShoreShade Refuses to Cease Its Wrongful Behavior.

96. Solbello first became aware of ShoreShade's infringing product on or around November 7th, 2023.

97. At the time Solbello first became aware of ShoreShade, it had already filed the application for the reissue patent that ultimately became the '606 Patent. Specifically, that application was filed on September 12, 2023.

98. Solbello also had two issued patents at the time it discovered ShoreShade's infringement—the '211 Patent and the Design Patent. So, on or about November 17, 2023, Solbello sent Defendant a cease-and-desist letter ("Initial Letter") generally addressing Defendant's wrongful conduct.

99. Because the '606 Patent was still in prosecution and had not yet issued, Solbello's Initial Letter focused on its two issued patents, the '211 Patent and the Design Patent. A true and accurate copy of Solbello's Initial Letter is attached hereto as **Exhibit O.**

100. On December 18, 2023, Defendant replied ("Reply Letter") to Solbello's Letter asserting, among other things, that it did not infringe upon Solbello's intellectual property, including the '211 Patent and Design Patent. A true and accurate copy of Defendant's Reply Letter is attached here as **Exhibit P.**

101. To directly address Defendant's claims of non-infringement made in the Reply Letter, Solbello took action in the on-going prosecution of the reissue

application that ultimately became the ’606 Patent to remove any dispute that Defendant was infringing Solbello’s intellectual property.

102. Solbello then had to wait for the examiner at the USPTO to review its application, any relevant prior art, and to ensure that Solbello was entitled to patent protection for its invention.

103. The USPTO completed its review and the ’606 Patent was issued on September 30, 2025.

104. Immediately thereafter, Solbello began preparations for filing this action to enforce its rights under the ’606 Patent.

FIRST CLAIM FOR RELIEF
[Patent Infringement]

105. Solbello restates and incorporates by reference the allegations contained in the preceding paragraphs as if fully set forth herein.

106. The ’606 Patent is valid and subsisting.

107. The ’606 Patent has not been canceled, expired, or abandoned at any time since being filed with and issued by the USPTO.

108. Solbello is, and was at all relevant times, the owner of the ’606 Patent and is entitled to enforce it.

109. The Infringing Product is made, used, offered for sale, sold and/or imported by Defendant infringe the ’606 Patent.

110. The unauthorized manufacture, use, offer for sale, sale, importation, and/or distribution by Defendant of the Infringing Products constitute patent

infringement, either direct patent infringement and/or contributory infringement. 35 U.S.C. § 271.

111. The unauthorized manufacture, use, offer for sale, sale, importation, and/or distribution by Defendant of the Infringing Products constitute inducement to patent infringement. 35 U.S.C. § 271.

112. The unauthorized and wrongful manufacture, use, offer for sale, sale, importation, and/or distribution of the Infringing Product by Defendant, with knowledge of and reckless disregard of Solbello's patent rights in the '606 Patent, constitute, upon information and belief, willful infringement. 35 U.S.C. § 284.

113. Solbello has sustained damage as a result of Defendant's infringement of its patent rights.

114. Solbello has been damaged and irreparably harmed by Defendants' infringement of the '606 Patent for which Solbello is entitled to relief under 35 U.S.C. § 284. Solbello will continue to suffer damages and irreparable harm unless Defendants are enjoined preliminarily and permanently by this Court from continuing their infringement.

115. Solbello has no adequate remedy at law.

116. Unless Defendant is enjoined and restrained from wrongfully infringing Solbello's patent rights, Solbello will continue to sustain damage as a result of Defendant's infringement and wrongful conduct.

117. Because Defendant's infringement of the '606 Patent has been, upon information and belief, conscious, deliberate, and willful, Solbello is entitled to both

a preliminary and permanent injunction against continued infringement. 35 U.S.C. § 283.

118. As a direct and proximate result of ShoreShade's infringement of the '606 Patent, Defendant has gained, profited, and derived economic advantage, the exact sum of which will be proven at trial after discovery.

119. Solbello is entitled to an accounting from Defendant for all gains, profits, and economic advantages derived by it through the infringement of the '606 Patent.

120. Solbello is entitled to recover from Defendant the greater of the losses sustained by Solbello resulting from Defendant's infringement, or the profits, gains, and economic advantages gained by Defendant through such infringement.

121. Because Defendant's infringement of the '606 Patent has been, upon information and belief, willful, Solbello is entitled to recover from ShoreShade a sum equal to three times the amount of actual damages proven at trial. 35 U.S.C. § 284.

122. This is an exceptional case, entitling Solbello to recover its attorneys' fees from Defendant. 35 U.S.C. § 285.

DEMAND FOR JURY TRIAL

Solbello hereby demands a trial by jury on all issues of fact triable by a jury.

WHEREFORE, Solbello respectfully prays unto the Court that:

1. The Court enter a judgment declaring the '606 Patent valid and owned by Solbello;

2. The Court conduct a preliminary hearing on an urgent basis under Local Rule 7.5 and enter an order granting preliminary injunctive relief;

3. The Court enter an Order granting Solbello permanent injunctive relief barring Defendant, directly or indirectly through agents or representatives, from manufacturing, using, offering to sell, selling, importing, marketing, and/or distributing the Infringing Products and/or any self-adjusting sun shade products which infringes the '606 Patent.

4. The Court enter an Order requiring Defendant to account to Solbello for all sales, profits, gains, and other economic advantages derived by it through the manufacturing, marketing, distribution, or sale of any self-adjusting sunshade products which, in any respect, infringes the '606 Patent;

5. The Court enter Judgment in favor of Solbello against Defendant for compensatory damages for patent infringement in an amount which will be established at trial, plus interest as permitted by law;

6. The Court enter Judgment in favor of Solbello against Defendant in an amount equal to three (3) times its compensatory damages, plus interest as permitted by law;

7. The Court tax the costs of this action, including reasonable attorneys' fees as permitted by law, against Defendant and in favor of Solbello; and,

8. The Court grant Solbello such other and further relief as it deems just and proper.

This the 7th day of November, 2025.

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**Of counsel, pro hac vice admission forthcoming*

VERIFICATION

I, Paul James, do hereby declare, "under oath and under penalty of perjury," that I have read the foregoing complaint, and the factual allegations contained there are true of my own knowledge, except to those matters and things stated upon information and belief and as to these things, I believe them to be true.

This the 6 day of November, 2025.

Paul James
President of Solbello, Inc.

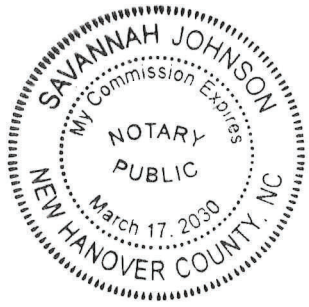
New Hanover COUNTY, NORTH CAROLINA

SWORN TO AND SUBSCRIBED before me this the 6th day of November, 2025.

Notary Public (signature)

Savannah Johnson
Notary Public (name printed)

My Commission Expires: 03/17/2030



Certificate of Service

I hereby certify that on November 7, 2025, I delivered the foregoing document to the following individual via the email listed below and by mailing a copy to the physical address listed below, including by United States mail and FedEx.

Craig N. Killen
Nelson Mullins Riley & Scarborough LLP
301 South College Street/23 Floor
Charlotte, NC 2802-6041
E-mail: craig.killen@nelsonmullins.com

I also delivered the foregoing document to the Defendant's registered agent by mailing a copy to the physical address listed below, including by United States mail and FedEx, and I have engaged a process server to effectuate service at the below address.

Shawn Carnes
1023 Redbird Road
Augusta, Georgia 30904

/s/ Christopher A. Cosper
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Ga. State Bar I.D. No.: 142020
E-mail: ccosper@hullbarrett.com
For the firm of
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Exhibit A

US011596211B2

(12) **United States Patent**
James

(10) **Patent No.: US 11,596,211 B2**
(45) **Date of Patent: Mar. 7, 2023**

(54) **SELF-ADJUSTING SUN SHADE ASSEMBLY**

(71) Applicant: **Solbello, Inc.**, Wrightsville Beach, NC (US)

(72) Inventor: **Paul T. James**, Wrightsville Beach, NC (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 160 days.

(21) Appl. No.: **17/417,739**

(22) PCT Filed: **Jun. 22, 2020**

(86) PCT No.: **PCT/US2020/038920**
§ 371 (c)(1),
(2) Date: **Jun. 23, 2021**

(87) PCT Pub. No.: **WO2021/040863**
PCT Pub. Date: **Mar. 4, 2021**

(65) **Prior Publication Data**

US 2022/0175098 A1 Jun. 9, 2022

Related U.S. Application Data

(60) Provisional application No. 62/892,700, filed on Aug. 28, 2019.

(51) **Int. Cl.**

A45B 23/00	(2006.01)
A45B 25/02	(2006.01)
A45B 25/06	(2006.01)
A45B 25/10	(2006.01)
A45B 25/18	(2006.01)

(52) **U.S. Cl.**
CPC ***A45B 23/00*** (2013.01); ***A45B 25/02*** (2013.01); ***A45B 25/06*** (2013.01); ***A45B 25/10*** (2013.01); ***A45B 25/18*** (2013.01); *A45B 2023/0093* (2013.01); *A45B 2025/105* (2013.01)

(58) **Field of Classification Search**
CPC A45B 23/00; E04H 15/44
See application file for complete search history.

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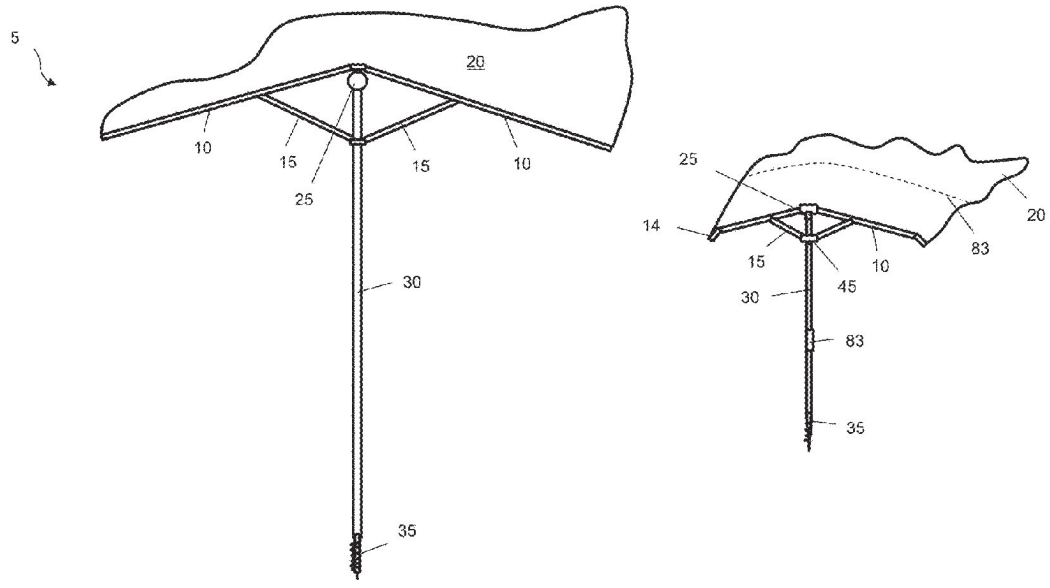
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Primary Examiner — Noah Chandler Hawk
(74) *Attorney, Agent, or Firm* — Ashley D. Johnson; Dogwood Patent and Trademark Law

(57) **ABSTRACT**

The presently disclosed subject matter is directed to a sun shade assembly. Particularly, the assembly includes a sail that releasably attaches to a pair of ribs, providing shade to the user. At least one support arm can be used to reinforce the ribs. A mast provides height to the assembly and includes an anchor that allows the assembly to be secured into a support surface (e.g., sand). The ribs and support arms rotate about the mast, thereby self-adjusting the direction of sail in response to the wind blowing. The assembly further includes a tension adjuster that can be tightened or loosed to control the rotation of the ribs and support arms in response to wind conditions.

20 Claims, 17 Drawing Sheets



(56) **References Cited**

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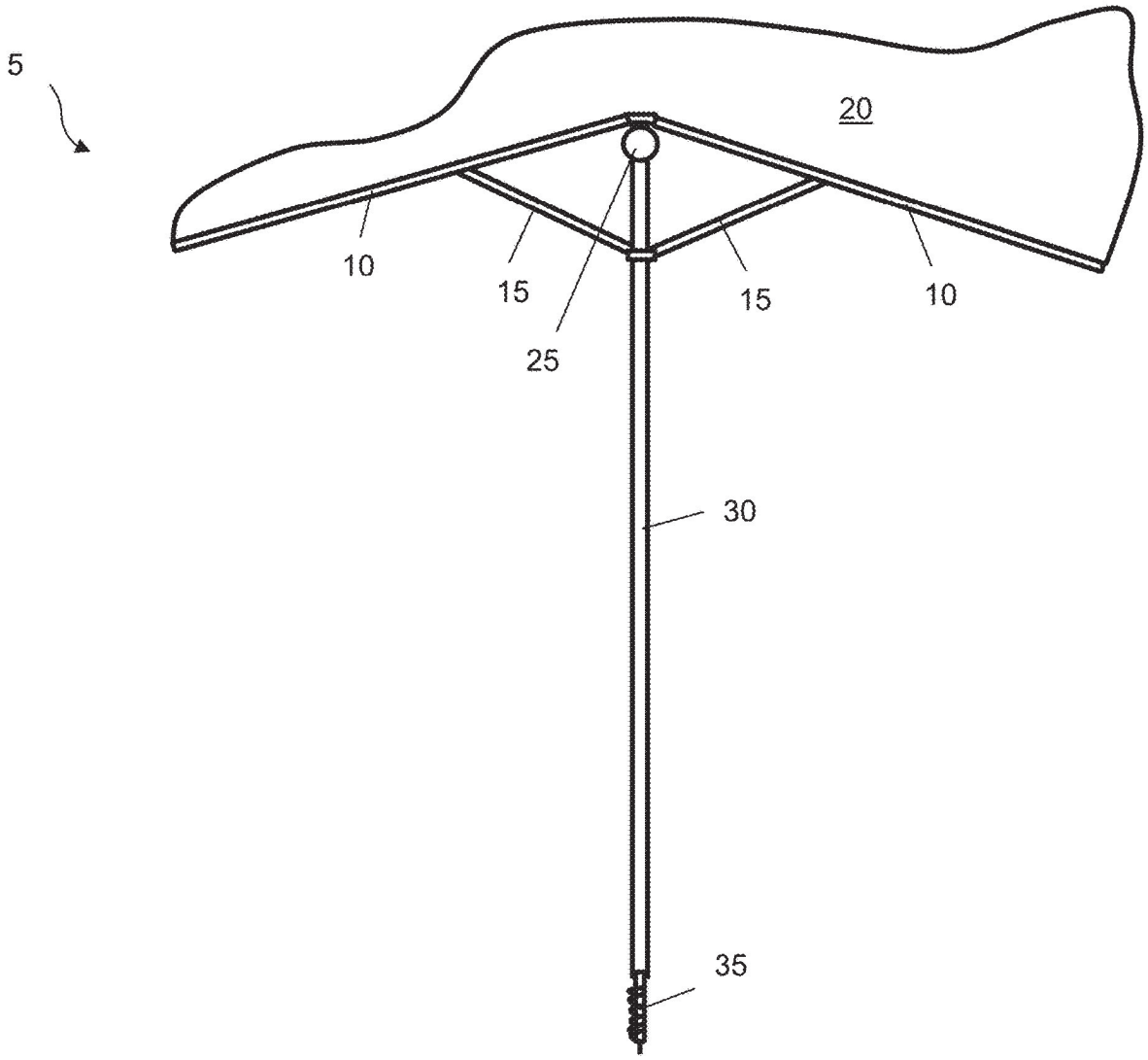


Fig. 1

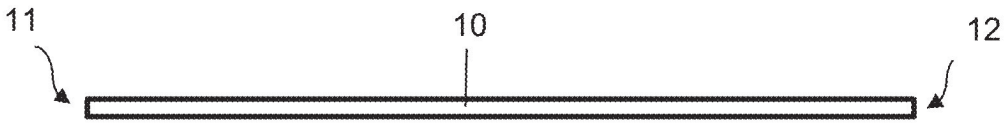


Fig. 2a

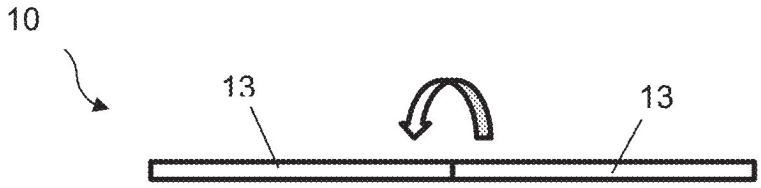


Fig. 2b



Fig. 2c

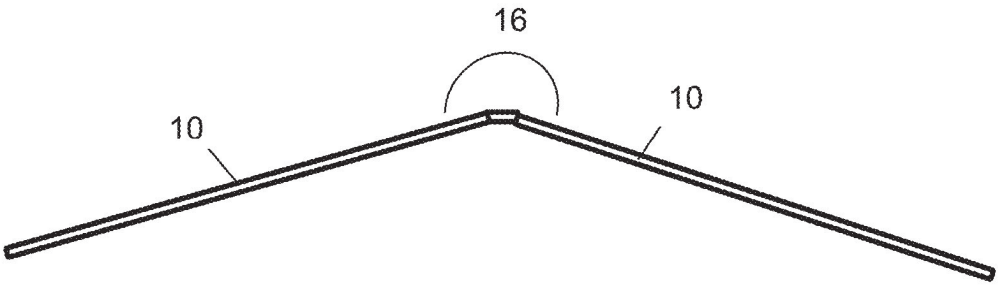


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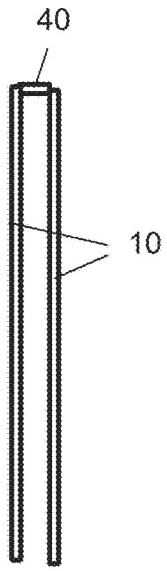


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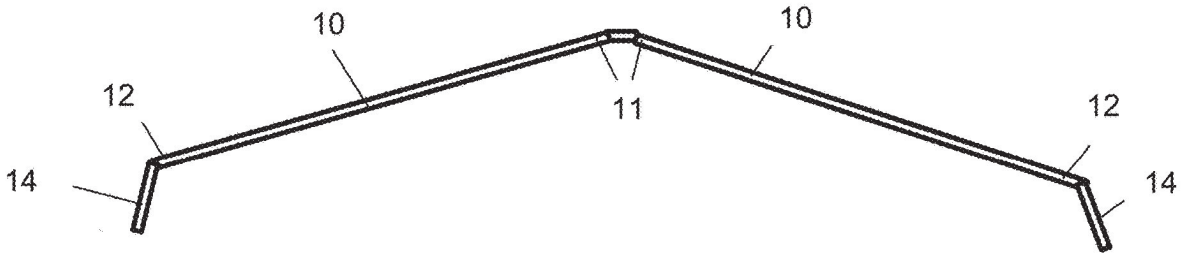


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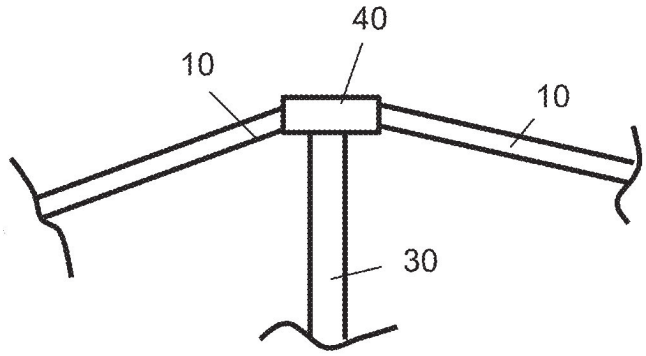


Fig. 3a

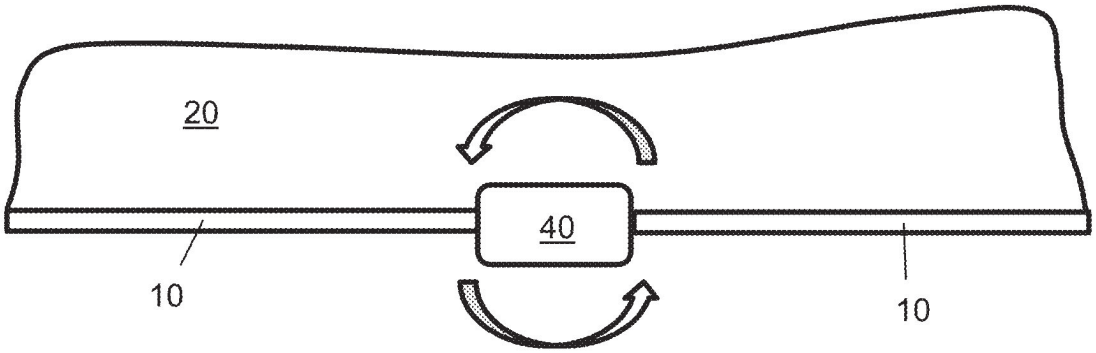


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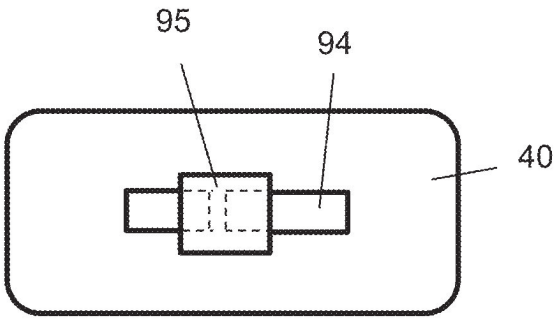


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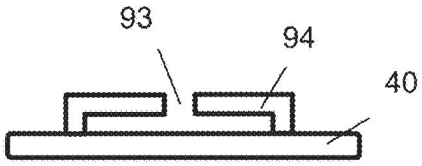


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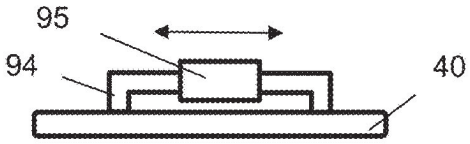


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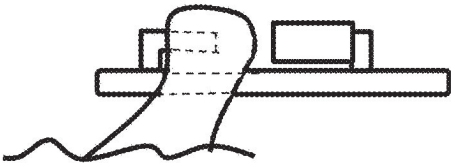


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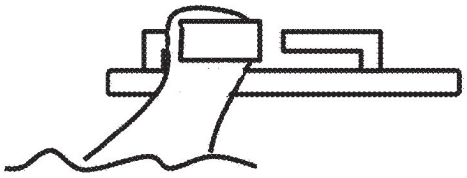


Fig. 3g

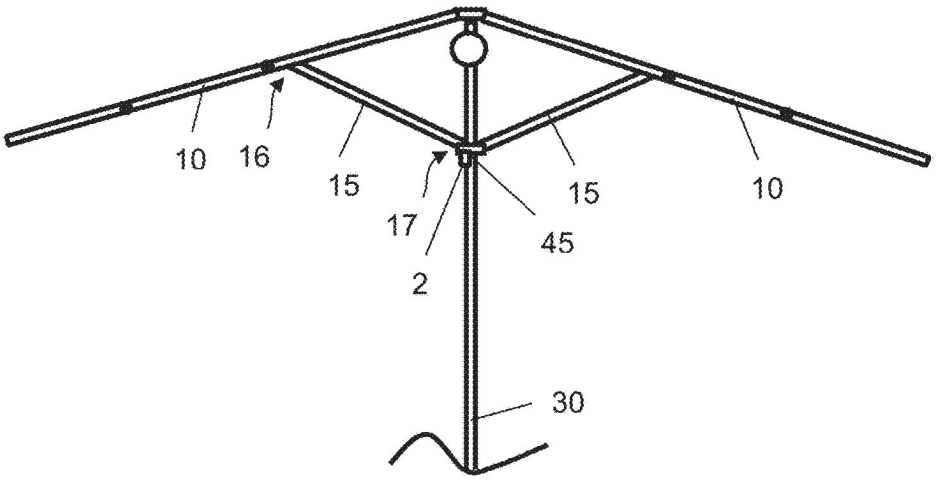


Fig. 4a

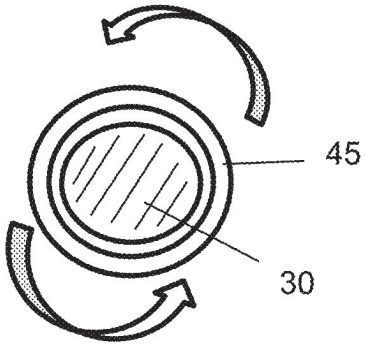


Fig. 4b

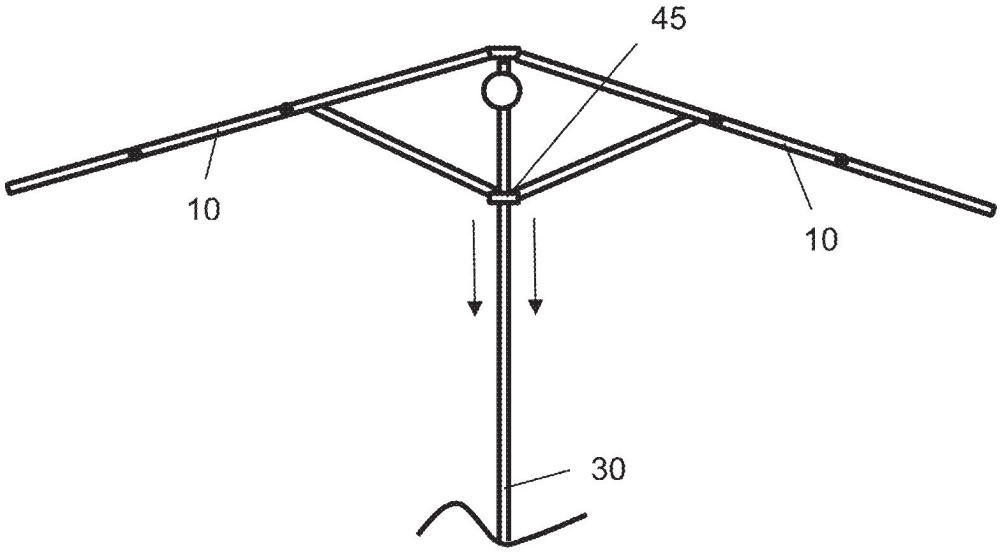


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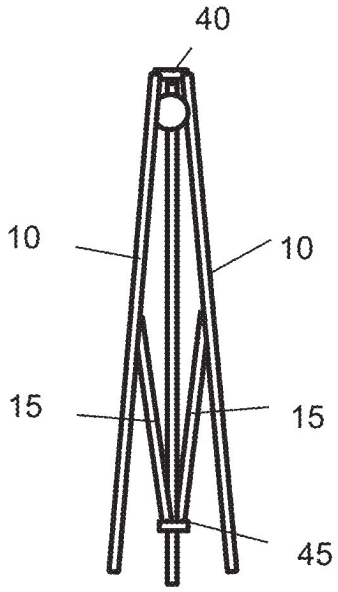


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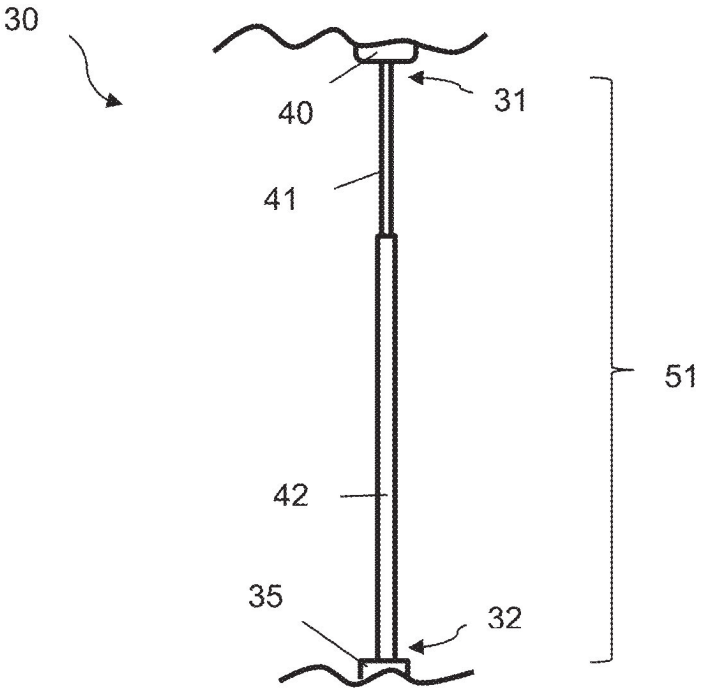


Fig. 5a

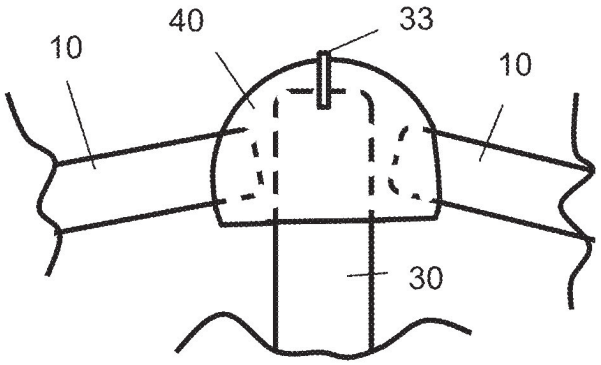


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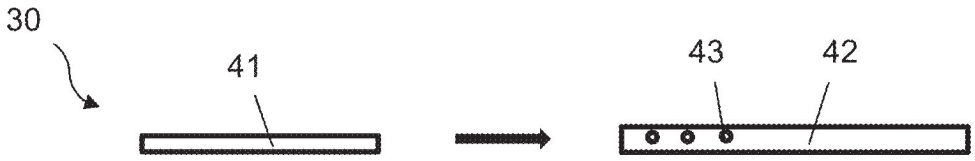


Fig. 5c



Fig. 5d

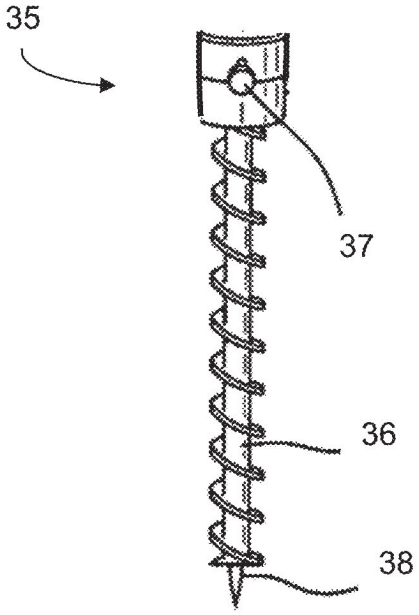


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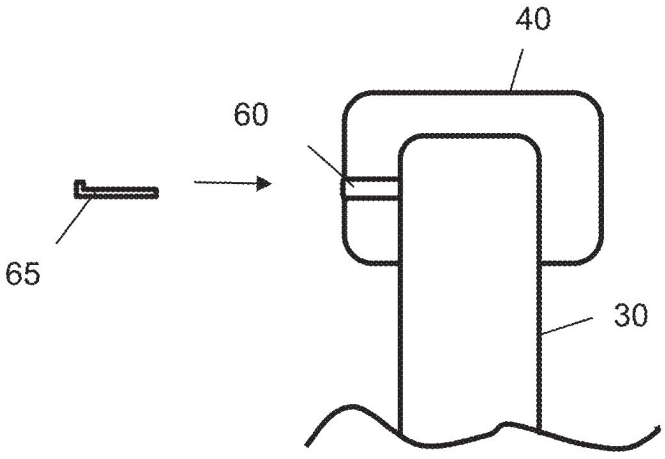


Fig. 7a

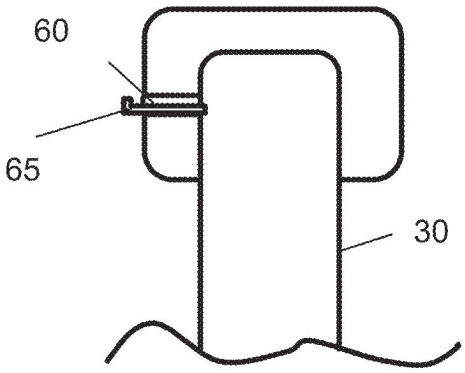


Fig. 7b

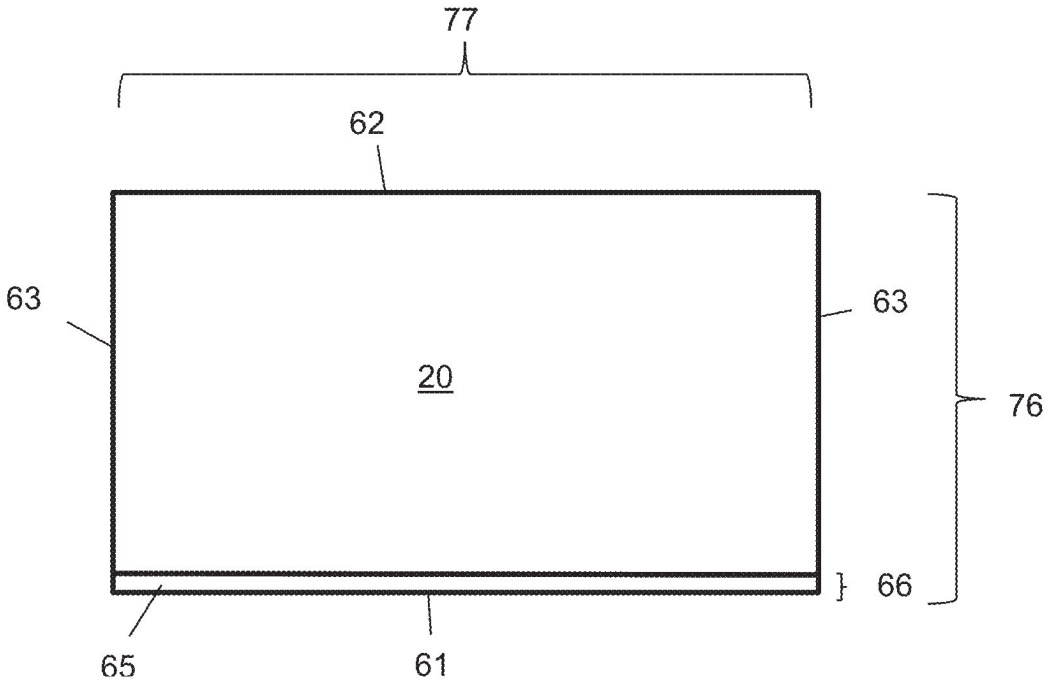


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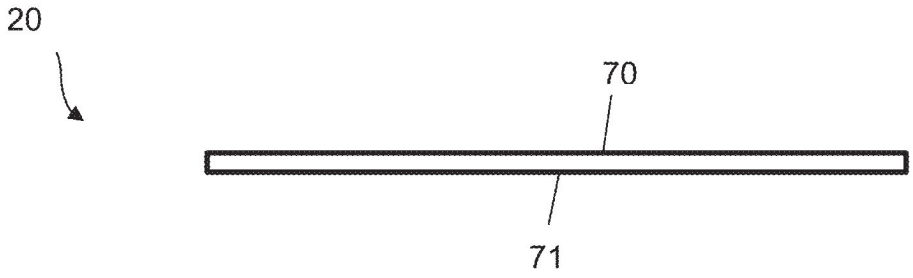


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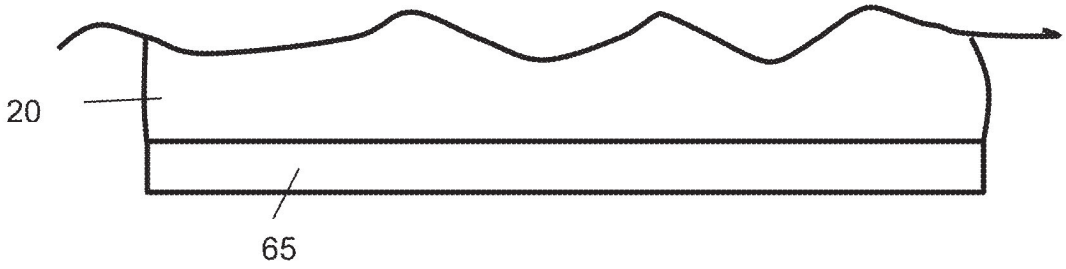


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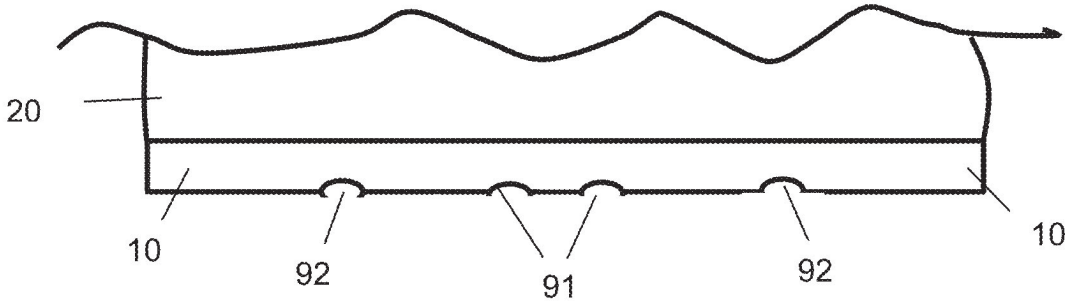


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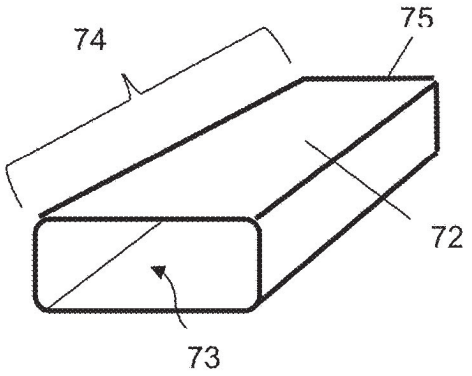


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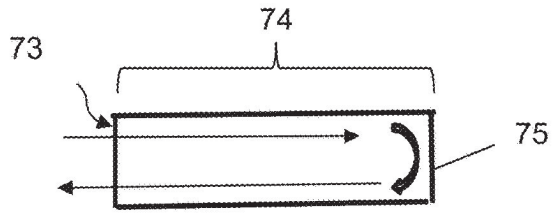


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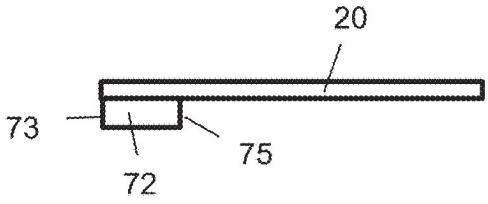


Fig. 8g

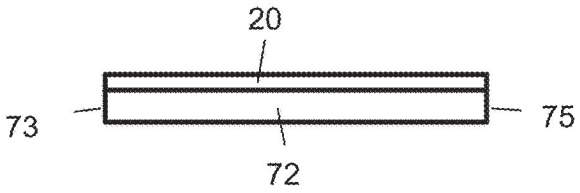


Fig. 8h

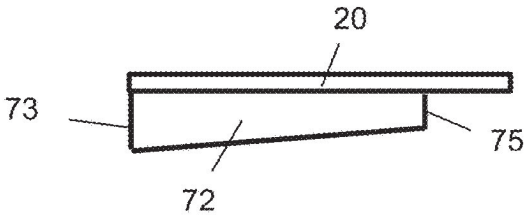


Fig. 8i

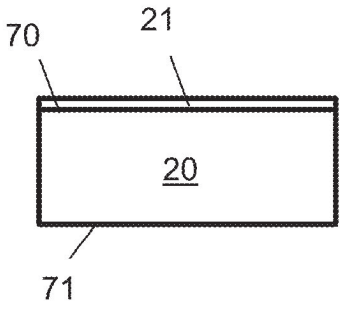


Fig. 9a

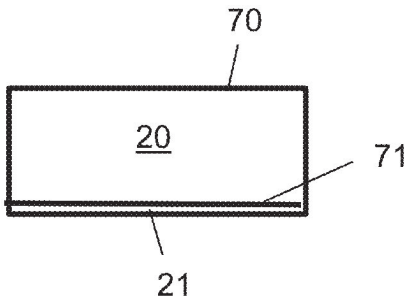


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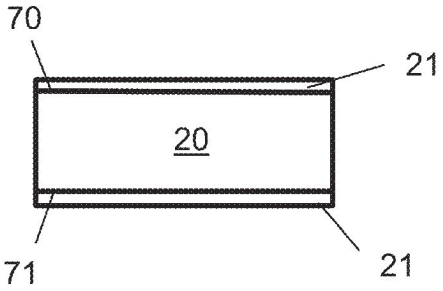


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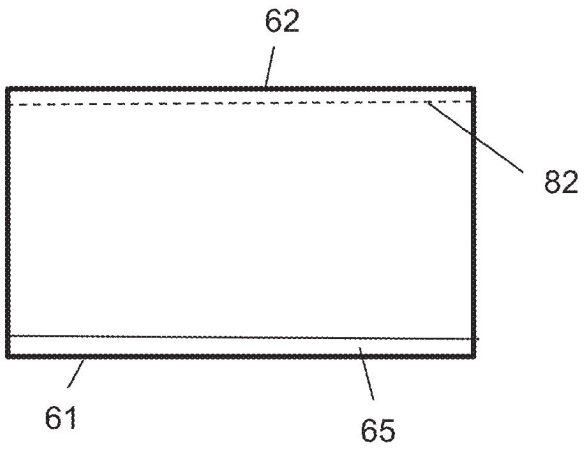


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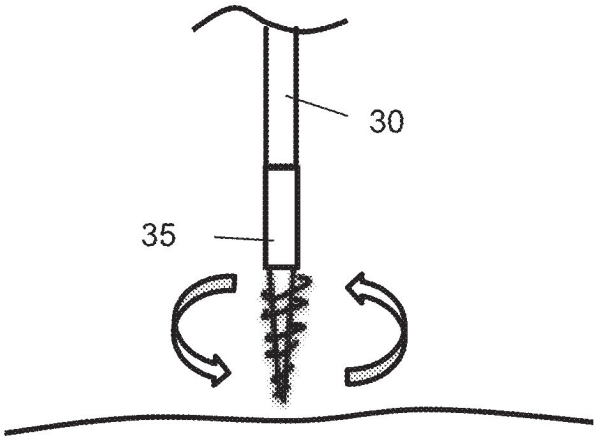


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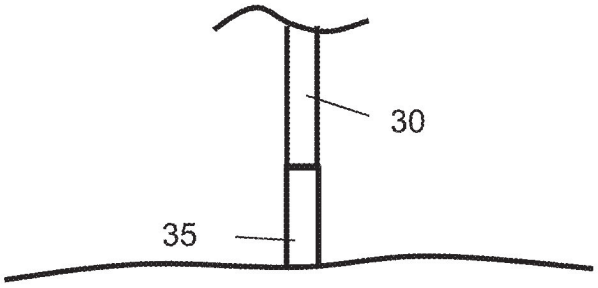


Fig. 10b

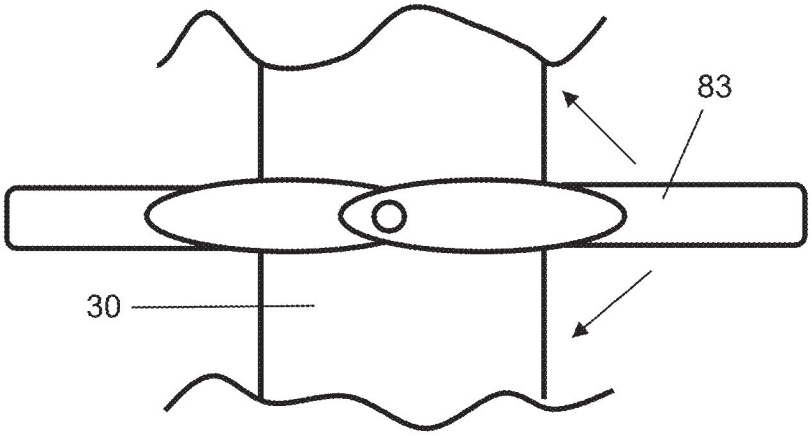


Fig. 10c

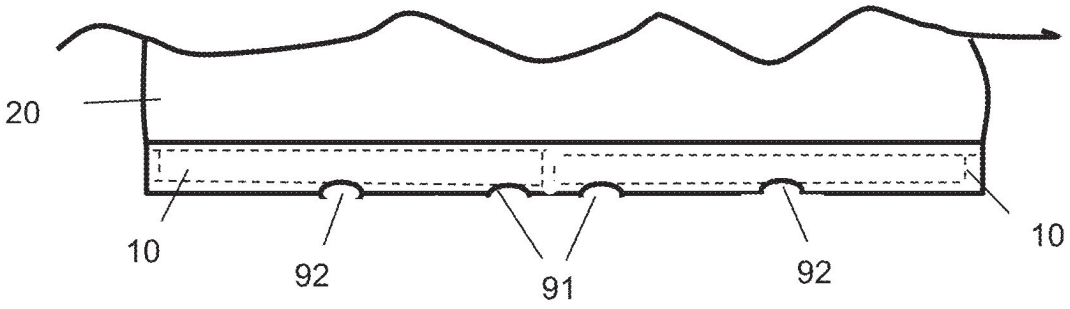


Fig. 10d

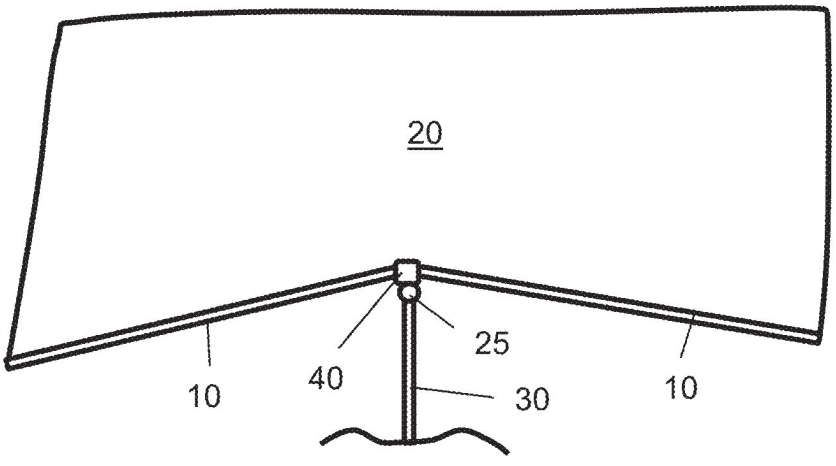


Fig. 10e

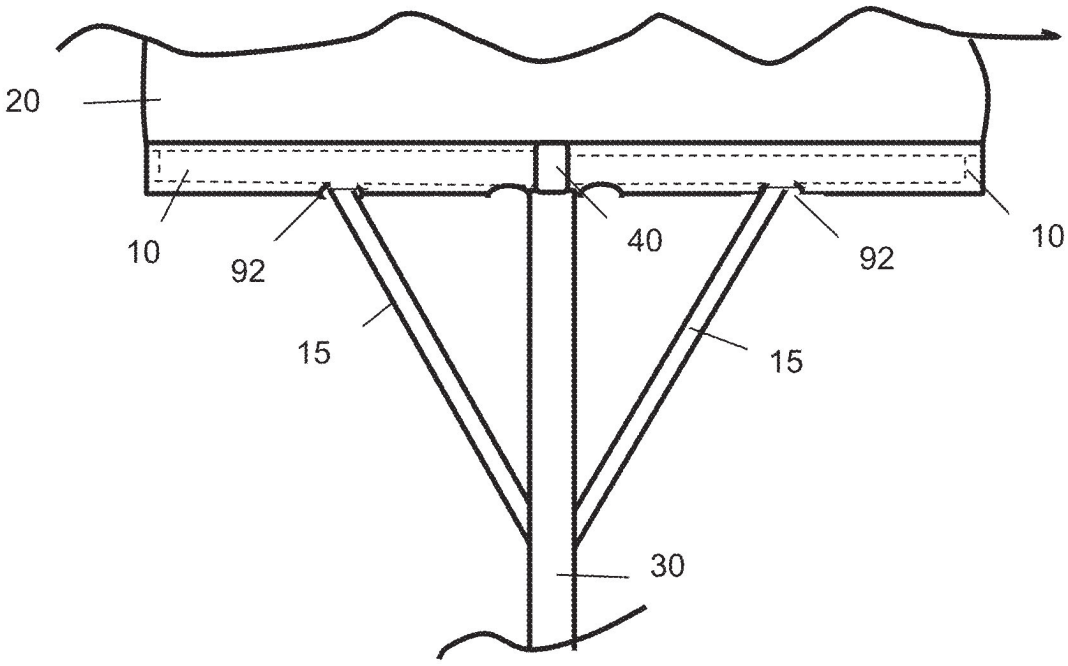


Fig. 10f

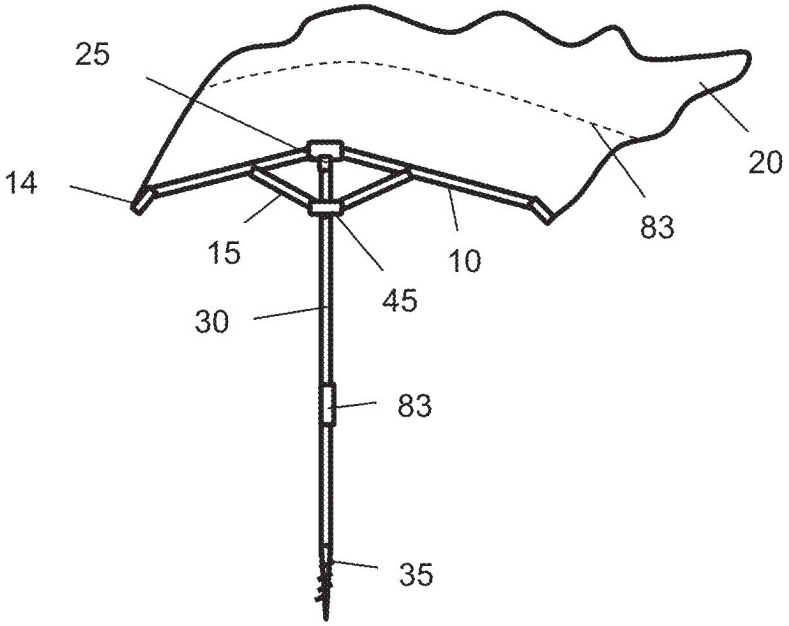


Fig. 10g

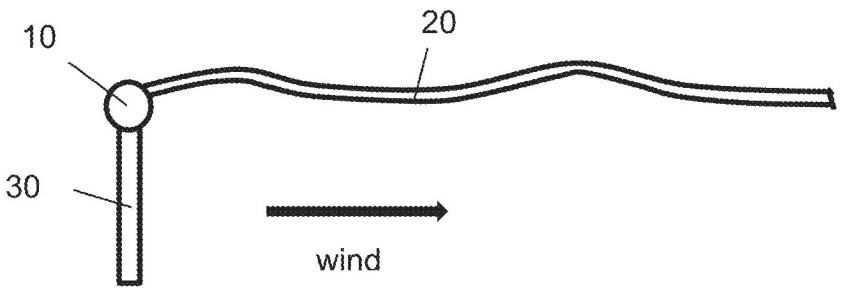


Fig. 10h

SELF-ADJUSTING SUN SHADE ASSEMBLY

CROSS REFERENCE TO RELATED APPLICATIONS

The present application claims the benefit of U.S. Provisional Patent Application No. 62/892,700, filed Aug. 28, 2019, the entire content of which is incorporated by reference herein.

TECHNICAL FIELD

The presently disclosed subject matter is directed to a self-adjusting sun shade assembly and to methods of making and the using the same.

BACKGROUND

Beach umbrellas are used to create an area shaded from the sunlight beneath the umbrella canopy. They are particularly useful at the beach where there is generally a lack of trees or roofed structures to provide shade. Because the skin of the beachgoer is largely exposed at the beach, there is a greater need to provide protection from harmful ultraviolet rays, which may cause sunburn or melanomas. Many beachgoers also require some form of shade to minimize heat discomfort. The shade and shelter provided by a beach umbrella is also useful in protecting the user's valuables and shielding perishable items from direct sunlight. Conventional beach umbrellas include a single central support pole with a pointed lower end that is inserted directly into the sand. Conventional umbrellas further include an overhead fabric covering attached to the support pole. However, the main problem with the canopy design of traditional umbrellas is that the position of the umbrella constantly shifts in response to wind gusts. As a result, the user must frequently readjust the umbrella to compensate for the shifts in movement. In addition, conventional umbrellas can easily tip over or be blown down the beach where they can cause hassle to the owner as well as injury to other beachgoers. Conventional umbrellas are also prone to wind breakage. It would therefore be beneficial to provide an umbrella with improved stability in response to the wind blowing. It would further be beneficial if the umbrella self-adjusted to the wind to prevent or reduce the likelihood of tipping over.

SUMMARY

In some embodiments, the presently disclosed subject matter is directed to a sun shade assembly (e.g., an assembly that provides shade from the sun). The assembly comprises a pair of ribs defined by a first end and a second end, wherein the first end of each rib is attached to a pivot cap. The assembly further includes a sail with a front edge comprising a channel sized and shaped to house each rib such that the ribs extend across the edge. The assembly includes a mast comprising a first end and a second end, wherein the first end is operably connected to the pivot cap, wherein the pivot cap can freely rotate about the mast. The assembly comprises at least one support arm with a first end and a second end, wherein the first end of the support arm is attached to a rib and the second end of the support arm is attached to a slider configured to move up and down the mast. The assembly comprises a tension adjuster that adjusts rotation of the pivot cap about the mast. The assembly comprises an anchor operably connected to the second end of the mast. The pivot cap, ribs, slider, and support arms are configured to rotate about the mast in response to blowing of the wind.

In some embodiments, the pivot cap rotates about the mast at an angle of about 0-360 degrees. In some embodiments, the pivot cap rotates about a top end of the mast (e.g., is configured to rotate about the top end of the mast).

In some embodiments, the ribs are configured at an angle of greater than 180 degrees relative to each other.

In some embodiments, one face of the pivot cap comprises a lock defined by a bridge comprising an opening and a slidable arm that moves to cover and expose the opening. A portion of sail material can be locked in between the bridge and slidable arm to lock it into position.

In some embodiments, the slider is configured as a collar that fits around the exterior circumference of the mast.

In some embodiments, the mast length is adjustable.

In some embodiments, the anchor is releasably attached to the second end of the mast.

In some embodiments, the anchor comprises an auger. The term "auger" refers to a member in which a spiral vane or multiple parallel vanes are provided about the perimeter of a shaft.

In some embodiments, the tension adjuster is configured to permit the pivot cap, slider, ribs, and support arms to freely rotate about the mast, not rotate about the mast, or any level of rotation therebetween. The pivot cap, slider, ribs, and support arms rotate as a single, attached unit.

In some embodiments, the sail channel comprises one or more apertures to facilitate insertion of the ribs into the channel.

In some embodiments, the sail channel comprises one or more apertures to allow direct contact between each rib and a corresponding support arm.

In some embodiments, the sail has a top face and a bottom face, and wherein the bottom face includes at least one conduit configured as a channel with an open mouth positioned adjacent to the channel, a closed back end, and a length parallel with the length of the sail.

In some embodiments, the sail has a top face and a bottom face and wherein at least one of the top or bottom faces comprises a coating.

In some embodiments, the sail has an opposed rear edge comprising an adjacent hem constructed from a durable material.

In some embodiments, the mast comprises at least one handle.

In some embodiments, the presently disclosed subject matter is directed to a method of using a sunshade. Particularly, the method comprises positioning the anchor of a sun shade assembly in a support surface. The sun shade assembly comprises: a pair of ribs defined by a first end and a second end, wherein the first end of each rib is attached to a pivot cap; a sail with a front edge comprising a channel sized and shaped to house each rib such that the ribs extend across the edge; a mast comprising a first end and a second end, wherein the first end is operably connected to the pivot cap, wherein the pivot cap can freely rotate about the mast; at least one support arm with a first end and a second end, wherein the first end of the support arm is attached to a rib and the second end of the support arm is attached to a slider configured to move up and down the mast; a tension adjuster that adjusts rotation of the pivot cap about the mast; and an anchor operably connected to the second end of the mast. The method further includes adjusting the tension adjuster to achieve a desired amount of rotation of the pivot cap, ribs,

support arms, slider, and sail relative to the non-movable mast. The sun shade assembly self-adjusts in response to the blowing of the wind.

In some embodiments, the tension adjuster can be adjusted to allow the pivot cap, slider, ribs, and support arms to freely rotate about the mast, not rotate about the mast, or any level of rotation therebetween.

In some embodiments, the sail has a top face and a bottom face, and wherein the bottom face includes at least one conduit configured as a channel with an open mouth positioned adjacent to the channel, a closed back end, and a length parallel with the length of the sail.

In some embodiments, one face of the pivot cap comprises a lock defined by a bridge comprising and opening and a slidable arm that moves to cover and expose the opening.

In some embodiments, the sail has an opposed rear edge comprising an adjacent hem constructed from a durable material.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a front plan view of an sun shade assembly in accordance with some embodiments of the presently disclosed subject matter.

FIG. **2***a* is a front plan view of an assembly rib in accordance with some embodiments of the presently disclosed subject matter.

FIGS. **2***b* and **2***c* are front plan views illustrating the folding of a rib in accordance with some embodiments of the presently disclosed subject matter.

FIG. **2***d* is a front plan view illustrating the angle of separation of two ribs in accordance with some embodiments of the presently disclosed subject matter.

FIG. **2***e* is a front plan view of folded ribs separated by a pivot cap in accordance with some embodiments of the presently disclosed subject matter.

FIG. **2***f* is a front plan view illustrating ribs comprising extension in accordance with some embodiments of the presently disclosed subject matter.

FIG. **3***a* is a front plan view of a pivot cap in accordance with some embodiments of the presently disclosed subject matter.

FIG. **3***b* is a top plan view of a pivot cap in use in accordance with some embodiments of the presently disclosed subject matter.

FIG. **3***c* is a top plan view of a pivot cap comprising a bridge and sliding arm in accordance with some embodiments of the presently disclosed subject matter.

FIGS. **3***d*-**3***g* are side plan view of a pivot cap bridge and arm in use in accordance with some embodiments of the presently disclosed subject matter.

FIG. **4***a* is a top plan view of a slider configurated around a mast in accordance with some embodiments of the presently disclosed subject matter.

FIG. **4***b* is a front plan view of a mast comprising a slider in accordance with some embodiments of the presently disclosed subject matter.

FIGS. **4***c*-**4***d* are front plan views illustrating use of a slider to adjust the position of one or more support arms in accordance with some embodiments of the presently disclosed subject matter.

FIG. **5***a* is a front plan view of a mast in accordance with some embodiments of the presently disclosed subject matter.

FIG. **5***b* is a front plan view of a pivot cap FIG. **6***a* is a front plan view of a mast in accordance with some embodiments of the presently disclosed subject matter.

FIGS. **5***c* and **5***d* are side plan views illustrating a telescoping mast in accordance with some embodiments of the presently disclosed subject matter.

FIG. **6** is a perspective view of an anchor in accordance with some embodiments of the presently disclosed subject matter.

FIGS. **7***a* and **7***b* are cross-sectional views of a tension adjuster in use in accordance with some embodiments of the presently disclosed subject matter.

FIG. **8***a* is a top plan view of a sail in accordance with some embodiments of the presently disclosed subject matter.

FIG. **8***b* is a front plan view of a sail in accordance with some embodiments of the presently disclosed subject matter.

FIG. **8***c* is a fragmentary top plan view of a sail channel in accordance with some embodiments of the presently disclosed subject matter.

FIG. **8***d* is a fragmentary top plan view of a sail channel comprising a plurality of apertures in accordance with some embodiments of the presently disclosed subject matter.

FIG. **8***e* is a perspective view illustrating a sail conduit in accordance with some embodiments of the presently disclosed subject matter.

FIG. **8***f* is a side plan view of a sail conduit in accordance with some embodiments of the presently disclosed subject matter.

FIGS. **8***g*-**8***i* are side plan views of sail conduits in accordance with some embodiments of the presently disclosed subject matter.

FIGS. **9***a*-**9***c* are cross-sectional views of sail coating arrangements in accordance with some embodiments of the presently disclosed subject matter.

FIG. **9***d* is a top plan view of a sail with a rear hem in accordance with some embodiments of the presently disclosed subject matter.

FIGS. **10***a* and **10***b* illustrate one method of inserting an anchor into a support surface in accordance with some embodiments of the presently disclosed subject matter.

FIG. **10***c* is a front plan view of mast handles in accordance with some embodiments of the presently disclosed subject matter.

FIG. **10***d* is a fragmentary top plan view of a sail channel comprising ribs in accordance with some embodiments of the presently disclosed subject matter.

FIG. **10***e* is a front plan view of a sail positioned on ribs and a mast in accordance with some embodiments of the presently disclosed subject matter.

FIG. **10***f* is a front plan view of an assembly with side arms attached to the mast and ribs in accordance with some embodiments of the presently disclosed subject matter.

FIG. **10***g* is a front plan view of an assembly with a sail extended in the direction of the wind in accordance with some embodiments of the presently disclosed subject matter.

FIG. **10***h* is a side plan view of a sail extended in the direction of the wind in accordance with some embodiments of the presently disclosed subject matter.

DETAILED DESCRIPTION

The presently disclosed subject matter is introduced with sufficient details to provide an understanding of one or more particular embodiments of broader inventive subject matters. The descriptions expound upon and exemplify features of those embodiments without limiting the inventive subject matters to the explicitly described embodiments and features. Considerations in view of these descriptions will

likely give rise to additional and similar embodiments and features without departing from the scope of the presently disclosed subject matter.

Unless defined otherwise, all technical and scientific terms used herein have the same meaning as commonly understood to one of ordinary skill in the art to which the presently disclosed subject matter pertains. Although any methods, devices, and materials similar or equivalent to those described herein can be used in the practice or testing of the presently disclosed subject matter, representative methods, devices, and materials are now described.

Following long-standing patent law convention, the terms "a", "an", and "the" refer to "one or more" when used in the subject specification, including the claims. Thus, for example, reference to "a device" can include a plurality of such devices, and so forth. It will be further understood that the terms "comprises," "comprising," "includes," and/or "including" when used herein specify the presence of stated features, integers, steps, operations, elements, and/or components, but do not preclude the presence or addition of one or more other features, integers, steps, operations, elements, components, and/or groups thereof.

Unless otherwise indicated, all numbers expressing quantities of components, conditions, and so forth used in the specification and claims are to be understood as being modified in all instances by the term "about". Accordingly, unless indicated to the contrary, the numerical parameters set forth in the instant specification and attached claims are approximations that can vary depending upon the desired properties sought to be obtained by the presently disclosed subject matter.

As used herein, the term "about", when referring to a value or to an amount of mass, weight, time, volume, concentration, and/or percentage can encompass variations of, in some embodiments+/−20%, in some embodiments+/−10%, in some embodiments+/−5%, in some embodiments+/−1%, in some embodiments+/−0.5%, and in some embodiments+/−0.1%, from the specified amount, as such variations are appropriate in the disclosed packages and methods.

As used herein, the term "and/or" includes any and all combinations of one or more of the associated listed items.

Relative terms such as "below" or "above" or "upper" or "lower" or "horizontal" or "vertical" may be used herein to describe a relationship of one element, layer, or region to another element, layer, or region as illustrated in the drawing figures. It will be understood that these terms and those discussed above are intended to encompass different orientations of the device in addition to the orientation depicted in the drawing figures.

The embodiments set forth below represent the necessary information to enable those skilled in the art to practice the embodiments and illustrate the best mode of practicing the embodiments. Upon reading the following description in light of the accompanying drawing figures, those skilled in the art will understand the concepts of the disclosure and will recognize applications of these concepts not particularly addressed herein. It should be understood that these concepts and applications fall within the scope of the disclosure and the accompanying claims.

FIG. **1** illustrates one embodiment of sun shade assembly **5**. Particularly, the assembly includes sail **20** that releasably attaches to a pair of ribs **10**, providing shade to the user. At least one support arm **15** can be used to reinforce ribs **10**. Mast **30** provides height to the assembly and includes anchor **35** that allows the assembly to be secured into a support surface (e.g., sand). The ribs and support arms rotate about the mast, thereby self-adjusting the direction of sail **20** in response to the wind blowing, as described in more detail below. The assembly further includes tension adjuster **25** that can be tightened or loosed to control the rotation of the ribs and support arms in response to wind conditions.

FIG. **2***a* illustrates one embodiment of rib **10**. As shown, the rib includes first end **11** and second end **12**. In some embodiments, the ribs can each include one or more joints **13** that can be folded, allowing the ribs to be easily stored when not in use, as illustrated in FIGS. **2***b* and **2***c*. Any mechanism can be used to fold the ribs, such as (but not limited to) hinges, joints, and the like. For example, a living hinge, a barrel hinge, spring hinge, butterfly hinge, flag hinge, H hinge, or any other pivotable member can be used.

The term "living hinge" refers to a hinge integrally formed with two opposite portions of the same material. The term "barrel hinge" refers to a sectional barrel secured by a pivot. The term "spring hinge" refers to a spring-loaded hinge that applies force to secure the hinge in an open or closed configuration. "Butterfly hinge" refers to dovetail or parliament hinges. The term "flag hinge" refers to hinges that can be taken apart with a fixed pin on one leaf, manufactured in a right-hand or left-hand configuration. An "H hinge" refers to a hinge shaped like an "H."

However, in some embodiments, the ribs are non-foldable and remain in the fully extended state, even during storage.

The ribs can be slightly offset relative to each other (e.g., are not 180 degrees apart). The offset nature allows the ribs to compensate for stretching of the sail. For example, in some embodiments, the angle **16** between ribs **10** can be about 180-300 degrees, as shown in FIG. **2***d*. Thus, the angle between ribs **10** can be at least/no more than about 180, 185, 190, 195, 200, 205, 210, 215, 220, 225, 230, 235, 240, 245, 250, 255, 260, 265, 270, 275, 280, 285, or 290 degrees. It should be appreciated that angle **16** is not limited and can be larger or smaller than the range set forth herein. The ribs can be fully folded, such as in a storage position, as shown in FIG. **2***e*.

In some embodiments, rib **10** can include extension **14** as shown in FIG. **2***f*. The extensions provide a decorative look the assembly when the sail is attached. Each extension can be attached to rib second end **12** using any desired method (e.g., adhesive, welding, clips, clamps, hinges, screws, bolts, magnets, etc.). It should be appreciated that extension **14** is optional.

Ribs **10** can have any desired length. For example, suitable lengths can include (but are not limited to) about 3-10 feet. Thus, the ribs can have a length of at least about (or no more than about) 3, 3.5, 4, 4.5, 5, 5.5, 6, 6.5, 7, 7.5, 8, 8.5, 9, 9.5, or 10 feet. However, the presently disclosed subject matter is not limited the length of each rib can be larger or smaller than the range given herein.

The ribs are joined using pivot cap **40**, as illustrated in FIG. **3***a*. The pivot cap joins ribs **10** and enables rotation of the ribs about mast **30**. Thus, the pivot cap can freely rotate about the mast in response to wind conditions, as discussed in more detail below and as shown in FIG. **3***b*. The ribs can rotate in a clockwise or counterclockwise direction, depending on the wind direction. It should be appreciated that the ribs can join to pivot cap **40** using any mechanism (e.g., screws, bolts, clips, hinges, welding, adhesive, magnets, and the like).

In some embodiments, one face of pivot cap **40** includes bridge **94** comprising opening **93** and slidable arm **95** that can be used to releasably lock the sail into proper position, as shown in FIGS. **3***c*-**3***e*. Particularly, a portion of the sail can be inserted into opening **94**. Arm **95** can then be slid to

trap the portion of the sail over the bridge, as shown in FIGS. **3***f* and **3***g*. Thus, a portion of the sail is trapped between the bridge and the arm. To release the sail, the arm can be slid to expose opening **93**, thereby allowing the sail to be removed. The term "bridge" refers to any device that has a raised portion with an opening configured therein. In some embodiments, the arm can fully surround at least a segment of the raised bridge portion.

As shown in FIG. **4***a*, the assembly can include one or more support arms **15** that provide stability to the ribs, allowing the assembly to support the sail even in high wind conditions. Each support arm includes first end **16** attached to rib **10** and second end **17** attached to slider **45**. The support arms can be attached to the rib and slider using any known mechanism, such as the use of adhesives, welding, magnets, mechanical elements (screws, bolts, clips), and the like. In some embodiments, the support arms are hingedly attached to the ribs and/or slider to allow for easy transitioning between positions.

Slider **45** can move along mast **30** to fold or unfold the ribs and support arms. In some embodiments, the slider can be configured as a collar that fits about the outer circumference of mast **30**, as shown in FIG. **4***b*. The inner circumference of slider **45** is therefore at least slightly larger than the outer circumference of mast **30**. In this way, the slider and support arms can rotate freely about the mast. Particularly, the mast remains in a stationary position, while the slider (and attached support arms and ribs) rotate in response to the wind blowing. The slider can rotate in any direction (e.g., clockwise and counterclockwise).

The slider can include retention element **2** to keep it from sliding down the length of the mast. The retention element can include any device that retains the slider in a desired position on the mast, such as (but not limited to) a removable ledge with an outer circumference larger than the inner circumference of the slider, clips, pins, clasps, and the like. The retention element therefore locks the slider at a desired location along the mast. In this way, the ribs and support arms can be maintained in the open configuration without the slider slipping to a lower position. Likewise, the slider can also be locked in a lower "storage" configuration along the mast (or any location therebetween).

The slider can also be used to fold the ribs and support arms, such as when the assembly is transitioned to a storage configuration (e.g., not in use). When the slider is in an upper position on the mast, the support arms and ribs are unfolded outward and thus sail **20** is unfolded, as shown in FIG. **4***a*. When the slider moves to a lower position on the mast, the support arms and ribs are folded to the storage position, as shown in FIGS. **4***c* and **4***d*. Therefore, the slider can travel on the mast in an upward direction to extend the ribs and support arms to a fully open configuration. The slider can also move downward along the mast to transition the ribs and support arms into a folded position.

Ribs **10** and support arms **15** can have any desired cross-sectional shape. For example, the ribs and support arms can be configured with a circular, oval, square, rectangular, triangular, pentagonal, hexagonal, octagonal, heart, diamond, or abstract cross-sectional shape.

As set forth above, assembly **5** comprises mast **30** that reinforces ribs **10** and support arms **15**, as well as provides height to the assembly, as shown in FIG. **5***a*. The mast further provides a base about which the ribs can rotate via pivot cap **40**. The mast includes first end **31** operatively attached to pivot cap **40** and second end **32** attached to anchor **35**. The mast can be permanently or releasably attached to the pivot cap and/or anchor.

The pivot cap is attached to mast first end **31** using any known method. For example, a screw, bolt, or other element **33** can be threaded through the pivot cap, extending into the mast as shown in FIG. **5***b*. In this way, the pivot cap attaches to the mast and still can rotate freely in a clockwise or counterclockwise direction. The pivot cap can have any desired shape and is not limited to the embodiment shown in FIG. **5***b*. Attachment of the pivot cap to the mast is further not limited.

Mast **30** includes length **51** that in some embodiments can be adjusted as desired by the user. For example, the mast can include telescoping inner and outer tubes **41**, **42**. The term "telescoping" refers to a mechanical action of at least two longitudinal bodies of congruent cross-sections sliding relative to each other along a common longitudinal axis. As shown in FIGS. **5***c*-**5***d*, inner tube **41** can be at least partially slidably disposed into the interior of outer tube **42**. Specifically, the diameter of the outer tube is larger than the diameter of the inner tube such that the inner tube can be housed within the interior of the outer tube. The mast can include any number of telescoping tubes. A locking pin can pass through one or more holes **43** configured in the outer tube to hold the mast at the desired length. Alternatively, the inner and outer tubes can cooperate with a locking screw to secure the mast height. It should be appreciated that the length of the mast can be locked using any known element, such as friction fit, screw fit, snap-fit, screws, bolts, and the like.

It should further be appreciated that the length of the mast can be adjusted using any known mechanism and is not limited to a telescoping arrangement. For example, the mast can include a plurality of segments that can be added or removed as desired to achieve a suitable height. In other embodiments, the length of mast **30** is not adjustable.

Mast **30** can have any desired cross-sectional shape. For example, the mast can be configured with a circular, oval, square, rectangular, triangular, pentagonal, hexagonal, octagonal, heart, diamond, or abstract cross-sectional shape.

Second end **32** of the mast is operatively connected to anchor **35**. The term "anchor" broadly refers to any element that provides weight and/or a mechanism by which to secure assembly **5** into a support surface (e.g., sand). The anchor can be permanently attached to mast **30** using adhesives, welding, and the like. Alternatively, the anchor can be releasably attached to the mast using any of a wide variety of mechanical elements (e.g., screw knob **37**). A releasably attached anchor allows for the replacement of the anchor depending on use conditions (e.g., beach sand versus grass or rock).

FIG. **6** illustrates one embodiment of anchor **35** comprising auger **36** that can be configured as any type of spike, helical corkscrew, or shaft optionally having a threaded portion capable of being turned and embedding itself into a support surface (e.g., sand at a beach). Lower end **38** of the auger can be configured as a spike or pointed end to initiate insertion of the anchor into the support surface. Because auger **36** is inserted into a support surface, it does not rotate and remains in the inserted position until the user desires to remove it. Likewise, the mast does not rotate in response to wind conditions due to its attachment to the anchor.

The disclosed assembly further includes tension adjuster **25** that allows a user to adjust the tension on the pivot cap relative to the mast easily and safely. In this way, a user can alter the amount of rotation ribs **10**, support arms **15** and slider **45** have about mast **30** in response to wind conditions. The tension adjuster can be generally located adjacent to the

pivot cap. The tension adjuster is also attached to mast **30** using any known mechanism (e.g., screws, bolts, clips, etc.).

As described above, the pivot cap (and attached ribs, slider, and support arms) can freely rotate about the mast in response to the wind blowing. The tension adjuster can be tightened as desired by the user (e.g., when the wind is shifting back and forth) to stop or limit rotation of the pivot cap (and ribs, support arm, and slider) about the mast to maintain a more balanced assembly. For example, in some embodiments, the tension adjuster can be loosened to allow the pivot cap, ribs, support arms, and slider to freely rotate (e.g., 360 degrees) about the mast. In other embodiments, the pivot cap, ribs, slider, and support arms have a more limited freedom to rotate (e.g., it takes a stronger gust of wind to rotate). In some embodiments, the tension adjuster can be fully tightened such that the ribs, slider, and support arms cannot rotate relative to the mast.

Tension adjuster **25** can have any desired configuration that allows a user to control the level of movement of the tension cap relative to the mast. For example, in some embodiments, the tension adjuster can include passageway **60** with actuator **65** (e.g., lever or screw) capable of contacting pivot cap **40**, as shown in FIGS. **7***a* and **7***b*. Adjusting the actuator through the passageway will increase or decrease the tension on the pivot cap. Specifically, if the actuator is tightened to fully contact the pivot cap, the pivot cap will be incapable of moving relative to the mast. Alternatively, if the actuator is loosened such that it does not fully contact or press against the mast, the pivot cap is free to rotate. Any degree of actuator tightening can therefore adjust the level of pivot cap rotation.

The tension adjuster can have any known configuration and is not limited to the embodiment described above. For example, the tension adjuster can apply a force parallel, at an angle, or perpendicular to the tension it creates. The force can be generated by any known method, such as fixed displacement, stretching/compression of a spring, changing the volume of a gas, hydraulic pressure, or gravity. Tension adjuster **25** can therefore include any device that applies a force to create or maintain tension.

Further, actuator **65** can have any known configuration, such as (but not limited to) a lever, wrench, key, screw, handle, knob, bolt, and the like.

The ribs, mast, support arms, pivot cap, tension adjuster, and anchor can be constructed from any desired material, such as (but not limited to) metal (e.g., aluminum, steel, brass, stainless steel, copper), plastic, wood, stone, or combinations thereof. In some embodiments, each element is constructed from the same material. In other embodiments, one element can be constructed from a material that differs from at least one other element.

Assembly **5** further includes sail **20** that cooperates with ribs **10**. As shown in FIGS. **8***a* and **8***b*, the sail can include front edge **61**, rear edge **62**, and a pair of side edges **63**. The sail further includes top face **70** and bottom face **71**.

Front edge **61** comprises channel **65** sized and shaped to house each rib **10**, as shown in FIG. **8***c*. The front edge can be a straight edge, a curved edge, or have any known configuration. The ribs can be removed from channels **65** if desired by the user (e.g., to repair the sail or replace with a new sail). Channels **65** can be formed in the sail using any known method. For example, in some embodiments, the channel can be formed through sewing, welding, and the like. Such methods are well known in the art.

In some embodiments, each channel includes one or more apertures. For example, each channel can include apertures **91** sized and shaped to allow each rib to be inserted into channel **65**. The channel can further include one or more apertures **92** sized and shaped to allow each support arm to connect with the appropriate rib, as shown in FIG. **8***d*. Apertures **91**, **92** can have any desired size and/or shape so long as they allow for insertion of a rib and/or connection of a support arm with a rib (e.g., through one or more screws, clips, and/or the like). Further, apertures **91**, **92** can be positioned at any suitable position in the channel.

Optionally, bottom face **71** of the sail can include at least one closed conduit **72** that provides a passageway for the flow of the wind during use. FIG. **8***e* illustrates one embodiment of conduit **72** comprising open mouth **73** positioned adjacent to the sail front edge, length **74** and closed end **75**. FIG. **8***f* illustrates the flow of wind (represented by the arrows) as it enters open mouth **73**, hits closed end **75** and then exits the open mouth. Conduit **72** provides added support for the sail, preventing or reducing excess flapping in the wind.

In some embodiments, the length of the conduit is the same as the length of the sail (i.e., the conduit extends the full length of the sail). In other embodiments, the conduit is configured to be shorter than the length of the sail, as shown in FIGS. **8***g* and **8***h*. In some embodiments, the thickness of the conduit can taper as it reaches closed end **75**, as shown in FIG. **8***i*.

The conduit can have any cross-sectional shape, such as (but not limited to) square, rectangular, circular, oval, triangular, and the like.

In some embodiments, the sail can be formed as a single portion of material. In other embodiments, the sail can be constructed from two or more pieces of material joined together, such as by welding or sewing.

The sail can be configured in any desired shape, such as square, rectangular, rounded, oval, triangular, pentagonal, abstract, and the like. In some embodiments, the sail can include at least one straight edge to accommodate the channel.

The sail can further have any desired dimensions, such as length **77** and/or width **76** of about 3-20 feet (e.g., at least/no more than about 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, or 20 feet). In some embodiments, the sail can have an area of about 10-100 ft^2 (e.g., at least/no more than about 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, or 100 ft^2). However, the sail can be configured with dimensions outside the range given above. The term "length" refers to the distance in the longitudinal direction. The term "width" refers to the dimension perpendicular to the length.

Sail **20** can have any desired thickness, such as about 1 inch or less. Thus, the sail can have a thickness of about 1, 0.9, 0.8, 0.7, 0.6, 0.5, 0.4, 0.3, 0.2, 0.1, 0.01, 0.001 inches or less. However, the presently disclosed subject matter is not limited and the sail can have thickness of greater or less than the range given above.

Sail **20** can be constructed from any desired lightweight material. The term "lightweight material" refers to any material that is able to be lifted and carried by the wind (e.g., a wind speed of at least about 2-3 mph). Suitable materials can therefore include (but are not limited to) nylon, polyester, vinyl, rayon, canvas, acrylic fabric, cotton, or combinations thereof.

In some embodiments, the material(s) used to construct the sail can have a UPF (ultraviolet protection coefficient) rating of about 30 or more in accordance with ASTM D6544, incorporated by reference herein.

As shown in the cross-sectional views of FIGS. **9***a*-**9***c*, sail **20** can include coating **21** to reduce the noise level when the

sail is moving in the wind. The coating can be positioned on the sail top and/or bottom surfaces. The coating can span the entire top and/or bottom surface or only a portion thereof.

In addition to coating **21**, the sail can optionally be calendared and/or treated with the application of heat/pressure to aid in the reduction of noise. The term "calendaring" refers to a method of passing the sail between calendar rolls at high temperature and/or pressure.

Coating **21** can comprise any material that would serve to reduce the amount of noise and/or movement of sail **20**. Suitable materials can therefore include (but are not limited to) urethane polyurethane, plastic (e.g., polyethylene), or combinations thereof. Coating **21** can have any thickness, such as about 0.0001 inches to about 0.1 inches. In some embodiments, the coating can impart a waterproof or water-resistant quality to sail **20**. The term "waterproof" refers to a material that is impervious to water. The term "water-resistant" refers to the ability of a material to resist the entry of water to some degree but not entirely.

In some embodiments, sail **20** can include hem **82** sewn or otherwise applied at or adjacent to rear edge **62**, as shown in FIG. **9***d*. Hem **82** can be sewn with a durable material (e.g., monofilament nylon thread) to reduce the pliability of the sail, which aids in noise reduction and in the reduction of excess flapping in the wind. In some embodiments, hem **82** is in addition to any rear edge hem used to construct the sail (e.g., the rear edge can include an additional hem). It should be appreciated that hem **82** can be configured at any desired location.

In use, the disclosed umbrella assembly can be used to provide shade to one or more users. Anchor **35** is positioned in a support surface, such as sand at the beach. The anchor can be inserted into the ground using a twisting motion, which allows the auger to be easily buried, as shown in FIGS. **10***a* and **10***b*. In some embodiments, the mast can be manually rotated to insert the auger into the ground. In other embodiments, mast **30** can include one or more handles **83** that fold out to aid in screwing the auger into the ground, as illustrated in FIG. **10***c*. In some embodiments, handles **83** can rotate up and down, flush with the mast as shown by the arrows. Thus, the handles fold into the mast when not in use and can be easily folded out when desired to insert the auger into a support surface. It should be appreciated that the handles can have any desired configuration.

Mast **30** can then be extended to a desired length to accommodate one or more users and their belongings. For example, inner and outer tubes **41** and **42** can be adjusted as needed to a desired length. In other embodiments, the mast is of a single length and need only be positioned and attached to the anchor.

Ribs **10** can then be inserted into channel **65** of the sail. In some embodiments, each rib is inserted into channel aperture **91** for proper placement in the channel. It should be appreciated that aperture **91** can be positioned at any location in channel **65**. For example, in some embodiments, each aperture **91** is positioned adjacent to the center of the channel (e.g., about 1-10 inches from the center point of the channel). Once the ribs are inserted into channel **65**, apertures **92** are properly positioned to allow support arms **15** to be attached to the ribs, as shown in FIG. **10***d*. Particularly, the apertures provide an opening in the sail to allow the support arms to directly attach to the ribs. In this way, the support arms can be easily attached to the ribs.

The sail can then be secured into position via bridge **94** and arm **95** on the pivot cap, as shown in FIG. **10***e*. For example, in some embodiments, the portion of the sail positioned between apertures **91** can be inserted into the bridge opening, and the arm then slid over to trap the sail material in position. In this way, the sail does not significantly shift out of proper position during use.

The support arms can then be attached to the ribs through channel apertures **92**, as shown in FIG. **10***f*. Any known mechanism to secure the support arms to the ribs can be used. It should be appreciated that the opposing side of the support arms are secured to mast **30**.

It should be appreciated that the steps included above can be performed in any order.

If desired by the user, the tension adjuster can be set to lock the position of the ribs (e.g., no movement relative to the mast) or to limit movement. As the wind blows, the sail will move in response, blowing and extending outward providing shade to the user, as shown in FIGS. **10***g* and **10***h*. In some embodiments, the sail requires a wind speed of at least 2-3 miles per hour to flap or extend into the wind.

Because the support can rotate and adjust in response to the wind, the assembly has a reduced likelihood of falling over as a result heavy winds and/or when the wind shifts directions. Specifically, when the wind shifts direction, the sail will self-adjust (e.g. the pivot cap, ribs, sail, support arm, and slider rotate about the non-movable mast in response to the wind blowing and changing direction). In addition, because the sail rotates relative to the mast it prevents loosening the auger position and thereby causing failure of the assembly.

The disclosed assembly therefore offers many advantages over prior art systems. For example, because the sail consistently blows in response to the wind, the user's views are not blocked as is common with prior art umbrellas. As a result, users can keep an eye on children and the water at all times.

Further, the disclosed assembly allows the wind to self-adjust the direction of ribs **10** and sail **20**, saving the user the time and hassle of manually adjusting the assembly.

In addition, the assembly frame is designed to not fall over if the wind stops or changes direction by more than 90 degrees.

The frame of the assembly (e.g. mast) does not catch the wind. If the mast falls over, it typically falls straight to the ground and does not tumble down the beach.

The disclosed assembly is capable of being quickly assembled. Users can easily set up the umbrella assembly in about 40 seconds or less. Likewise, the assembly can be quickly and easily disassembled in about 40 seconds or less.

Current assemblies commonly make use of sandbags, requiring users to fill the bags with sand to weigh down the umbrella, which is messy, time consuming, and can be hazardous if no shovel is available. Further, if wet sand is used, it is even more difficult to fill the bags.

Assembly **5** comprises a single mast, so it is universally permitted on beaches where tents are not.

The mast is typically not in the middle of the umbrella sitting area, thereby providing adding convenience to the user.

The disclosed assembly is quiet compared to other umbrellas and sun shades. Specifically, sail **20** does not loudly flap in the wind. Rather the sail stays extended by consistently floating in the direction of the wind.

Further, the disclosed system acts as an effective seagull deterrent. Because the sail is constantly changing directions in response to the wind, birds are deterred and tend to keep their distance.

As described above, although several embodiments of the present invention have been described for illustrative purposes, those skilled in the art will appreciate that various

modifications, additions, and substitutions are possible without departing from the scope and spirit of the invention as disclosed in the accompanying claims.

What is claimed is:

1. A sun shade assembly comprising:

a pair of ribs defined by a first end and a second end, wherein the first end of each rib is attached to a pivot cap;

a sail with a front edge comprising a channel sized and shaped to house each rib such that the ribs extend across the edge;

a mast comprising a first end and a second end, wherein the first end is operably connected to the pivot cap, wherein the pivot cap can freely rotate about the mast;

at least one support arm with a first end and a second end, wherein the first end of the support arm is attached to a rib and the second end of the support arm is attached to a slider configured to move up and down the mast; and

an anchor operably connected to the second end of the mast;

wherein the pivot cap, ribs, slider, and support arms are configured to rotate about the mast in response to blowing of the wind.

2. The assembly of claim **1**, wherein the pivot cap rotates about the mast at an angle of about 0-360 degrees.

3. The assembly of claim **1**, wherein the ribs are configured at an angle of greater than 180 degrees relative to each other.

4. The assembly of claim **1**, wherein one face of the pivot cap comprises a lock defined by a bridge comprising and opening and a slidable arm that moves to cover and expose the opening.

5. The assembly of claim **1**, wherein the slider is configured as a collar that fits around the exterior circumference of the mast.

6. The assembly of claim **1**, wherein the anchor is releasably attached to the second end of the mast.

7. The assembly of claim **1**, wherein the sail channel comprises one or more apertures to facilitate insertion of the ribs into the channel.

8. The assembly of claim **1**, wherein the sail channel comprises one or more apertures to allow direct contact between each rib and a corresponding support arm.

9. The assembly of claim **1**, wherein the sail has a top face and a bottom face, and wherein the bottom face includes at least one conduit configured as a channel with an open mouth positioned adjacent to the channel, a closed back end, and a length parallel with the length of the sail.

10. The assembly of claim **1**, wherein the sail has a top face and a bottom face and wherein at least one of the top or bottom faces comprises a coating.

11. The assembly of claim **1**, wherein the sail has an opposed rear edge comprising an adjacent hem constructed from a durable material.

12. The assembly of claim **1**, wherein the mast comprises at least one handle for gripping the mast.

13. The assembly of claim **1**, further comprising a tension adjuster that adjusts rotation of the pivot cap about the mast.

14. The assembly of claim **13**, wherein the tension adjuster is configured to permit the pivot cap, slider, ribs, and support arms to freely rotate about the mast, not rotate about the mast, or any level of rotation therebetween.

15. A method of using a sunshade, the method comprising:

positioning the anchor of a sun shade assembly in a support surface, wherein the sun shade assembly comprises:

a pair of ribs defined by a first end and a second end, wherein the first end of each rib is attached to a pivot cap;

a sail with a front edge comprising a channel sized and shaped to house each rib such that the ribs extend across the edge;

a mast comprising a first end and a second end, wherein the first end is operably connected to the pivot cap, wherein the pivot cap can freely rotate about the mast;

at least one support arm with a first end and a second end, wherein the first end of the support arm is attached to a rib and the second end of the support arm is attached to a slider configured to move up and down the mast; and

an anchor operably connected to the second end of the mast;

wherein the sun shade assembly self-adjusts in response to the blowing of the wind.

16. The method of claim **15**, wherein the sail has a top face and a bottom face, and wherein the bottom face includes at least one conduit configured as a channel with an open mouth positioned adjacent to the channel, a closed back end, and a length parallel with the length of the sail.

17. The method of claim **15**, wherein one face of the pivot cap comprises a lock defined by a bridge comprising and opening and a slidable arm that moves to cover and expose the opening.

18. The method of claim **15**, wherein the sail has an opposed rear edge comprising an adjacent hem constructed from a durable material.

19. The method of claim **15**, wherein the sunshade assembly further comprises a tension adjuster that adjusts rotation of the pivot cap about the mast, and

wherein the method further includes adjusting the tension adjuster to achieve a desired amount of rotation of the pivot cap, ribs, support arms, slider, and sail relative to the non-movable mast.

20. The method of claim **19**, wherein the tension adjuster can be adjusted to allow the pivot cap, slider, ribs, and support arms to freely rotate about the mast, not rotate about the mast, or any level of rotation therebetween.

* * * * *

Exhibit B

United States of America

To Promote the Progress of Science and Useful Arts

The Director

of the United States Patent and Trademark Office has received an application for the reissue of a patent. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a reissue patent on the invention shall be granted under the law.

Therefore, this United States

Patent

grants to the person(s) having title to this patent the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States of America or importing the invention into the United States of America, and if the invention is a process, of the right to exclude others from using, offering for sale or selling throughout the United States of America, or importing into the United States of America, products made by that process, for the unexpired part of the term of the original grant, subject to the payment of maintenance fees as provided by 35 U.S.C. 41(b). See the Maintenance Fee Notice on the inside of the cover.

John A. Squires

Director of the United States Patent and Trademark Office

Maintenance Fee Notice

If the application for the original patent being reissued is a utility application filed on or after December 12, 1980, maintenance fees are due three years and six months, seven years and six months, and eleven years and six months after the date of the grant of the original patent, or within a grace period of six months thereafter upon payment of a surcharge as provided by law. The amount, number and timing of the maintenance fees required may be changed by law or regulation. Unless payment of the applicable maintenance fee is received in the United States Patent and Trademark Office on or before the date the fee is due or within a grace period of six months thereafter, the patent will expire as of the end of such grace period.

No maintenance fees are required in plant or design patents.

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(19) **United States**

(12) **Reissued Patent**
James

(10) **Patent Number: US RE50,606 E**

(45) **Date of Reissued Patent: Sep. 30, 2025**

(54) **SELF-ADJUSTING SUN SHADE ASSEMBLY**

(71) Applicant: **Solbello, Inc.**, Wilmington, NC (US)

(72) Inventor: **Paul T. James**, Wrightsville Beach, NC (US)

(73) Assignee: **Sobello, Inc.**, Wilmington, NC (US)

(21) Appl. No.: **18/367,224**

(22) Filed: **Sep. 12, 2023**

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Appl. No.: **17/417,739**
PCT Filed: **Jun. 22, 2020**
PCT No.: **PCT/US2020/038920**
§ 371 (c)(1),
(2) Date: **Jun. 23, 2021**
PCT Pub. No.: **WO2021/040863**
PCT Pub. Date: **Mar. 4, 2021**

U.S. Applications:

(60) Provisional application No. 62/892,700, filed on Aug. 28, 2019.

(51) **Int. Cl.**

A45B 23/00	(2006.01)
A45B 25/02	(2006.01)
A45B 25/06	(2006.01)
A45B 25/10	(2006.01)
A45B 25/18	(2006.01)

(52) **U.S. Cl.**
CPC ***A45B 23/00*** (2013.01); ***A45B 25/02*** (2013.01); ***A45B 25/06*** (2013.01); ***A45B 25/10*** (2013.01); ***A45B 25/18*** (2013.01); *A45B 2023/0093* (2013.01); *A45B 2025/105* (2013.01)

(58) **Field of Classification Search**
CPC . A45B 2023/0012; A45B 23/00; A45B 25/02; A45B 25/06; A45B 25/10; A45B 25/18; A45B 2023/0093; A45B 2025/105; E04H 15/28; E04H 15/58; E04H 15/44; E04H 15/46; E04H 15/48
See application file for complete search history.

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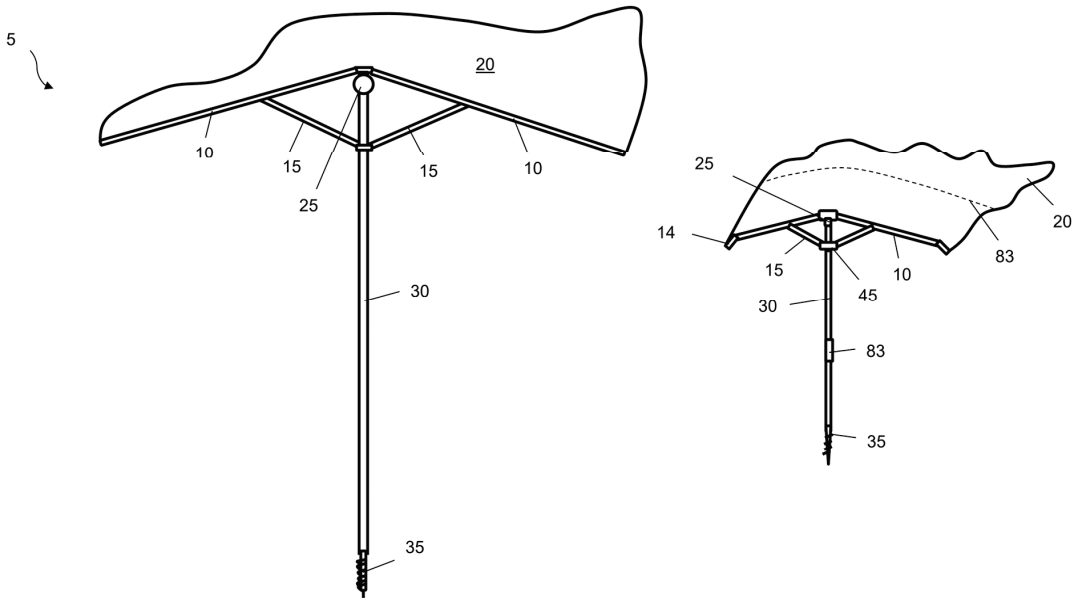
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Primary Examiner — Terrence R Till
(74) *Attorney, Agent, or Firm* — Schwartz Law Firm, P.C.

(57) **ABSTRACT**

The presently disclosed subject matter is directed to a sun shade assembly. Particularly, the assembly includes a sail that releasably attaches to a pair of ribs, providing shade to the user. At least one support arm can be used to reinforce the ribs. A mast provides height to the assembly and includes an anchor that allows the assembly to be secured into a support surface (e.g., sand). The ribs and support arms rotate about the mast, thereby self-adjusting the direction of sail in response to the wind blowing. The assembly further includes a tension adjuster that can be tightened or loosed to control the rotation of the ribs and support arms in response to wind conditions.

32 Claims, 17 Drawing Sheets



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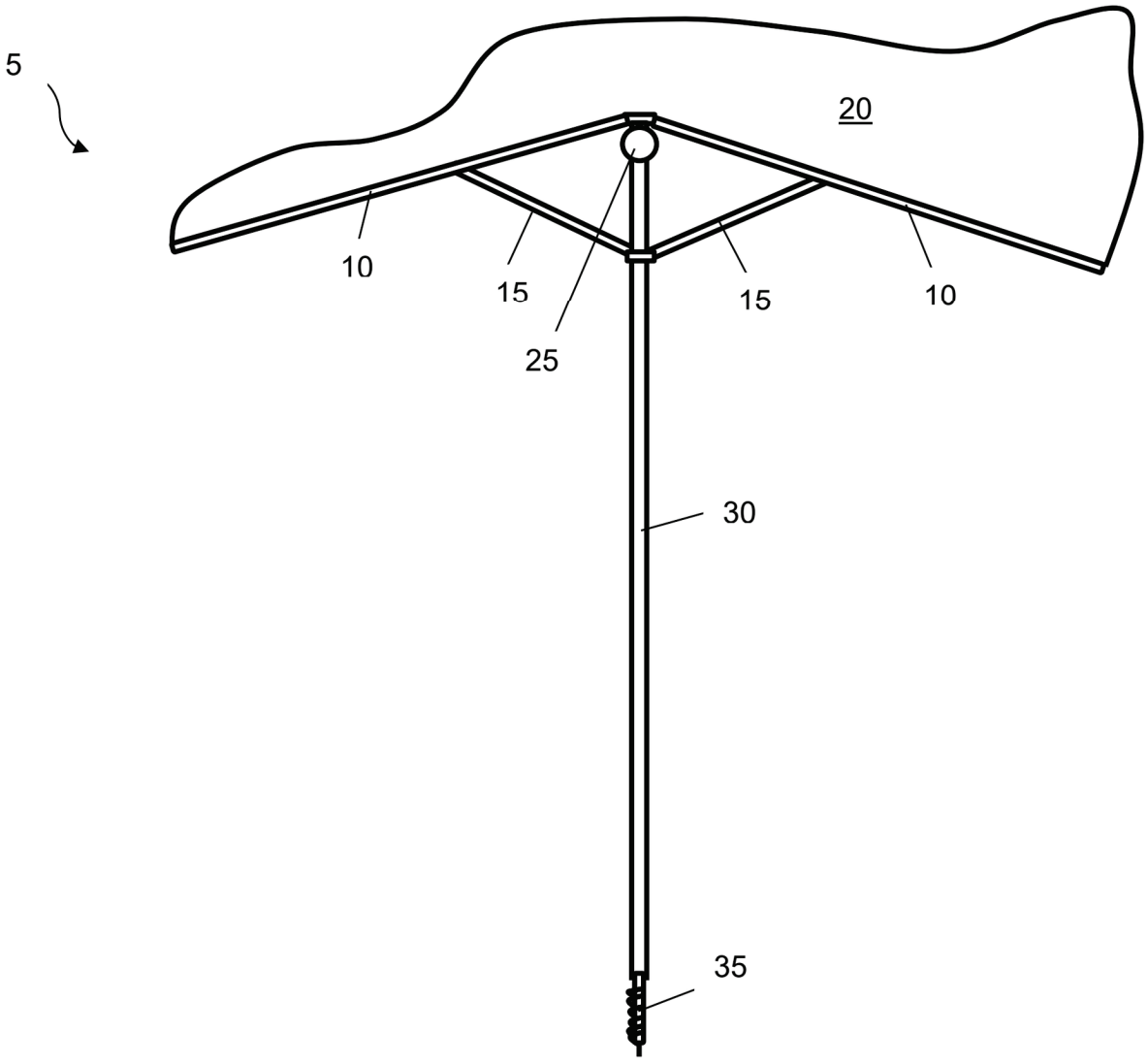


Fig. 1

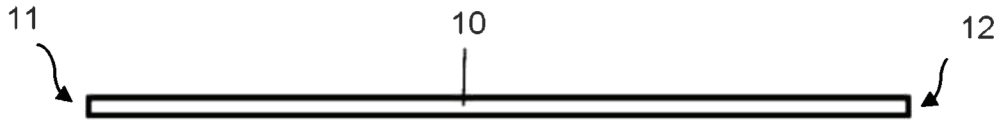


Fig. 2a

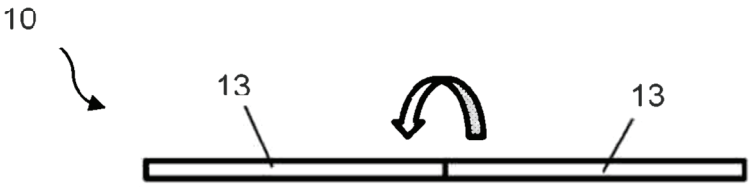


Fig. 2b

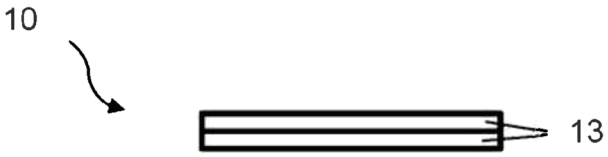


Fig. 2c

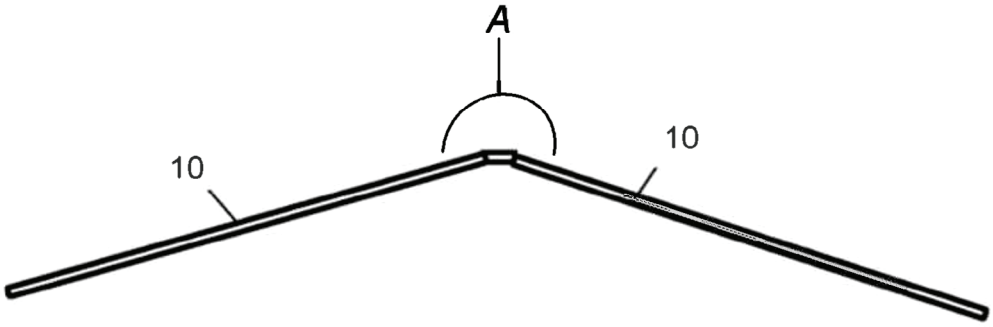


Fig. 2d

Amended

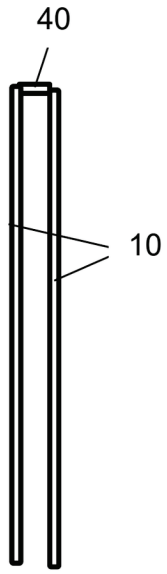


Fig. 2e

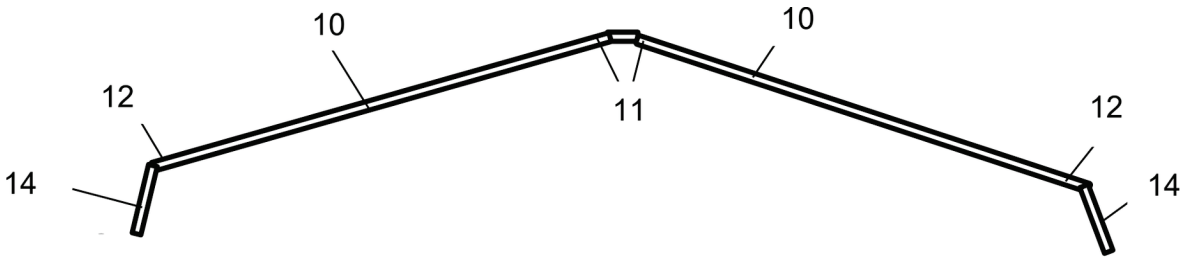


Fig. 2f

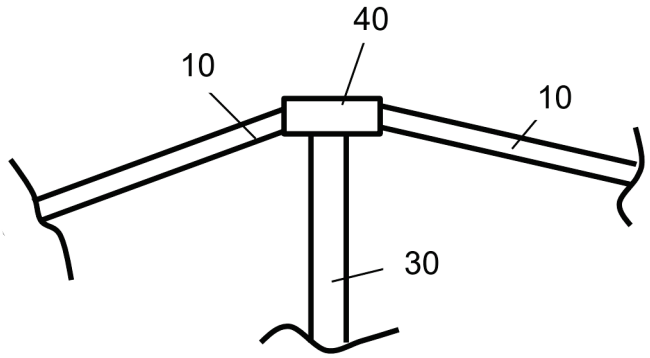


Fig. 3a

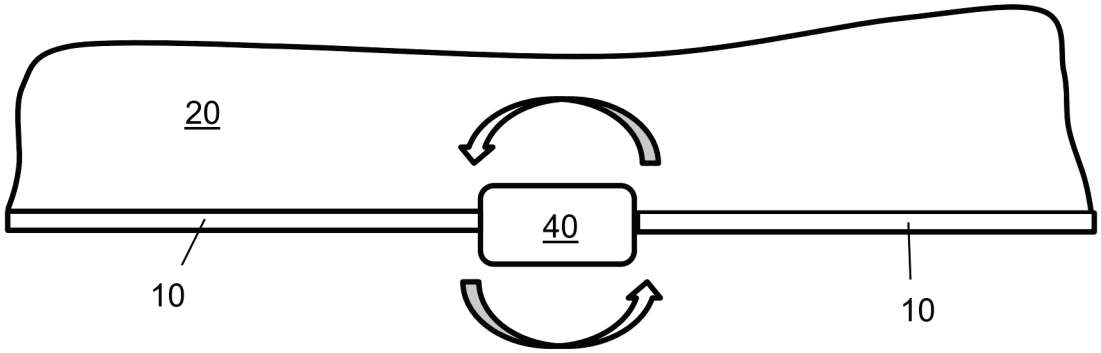


Fig. 3b

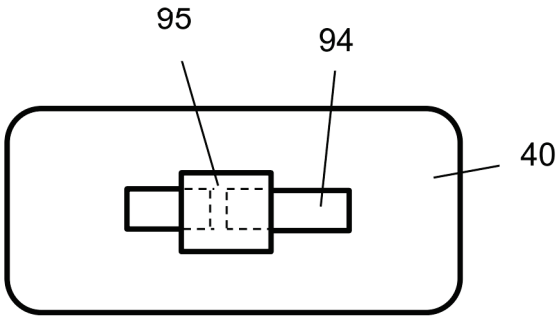


Fig. 3c

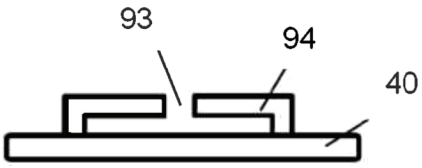


Fig. 3d

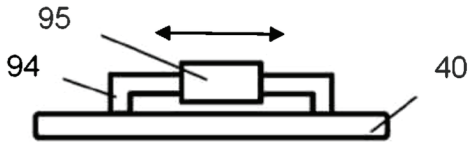


Fig. 3e

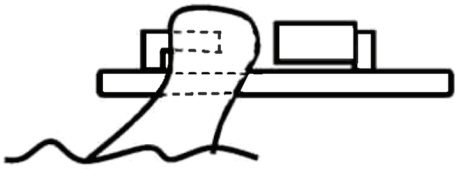


Fig. 3f

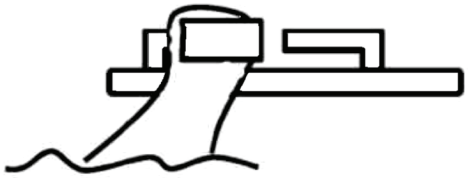


Fig. 3g

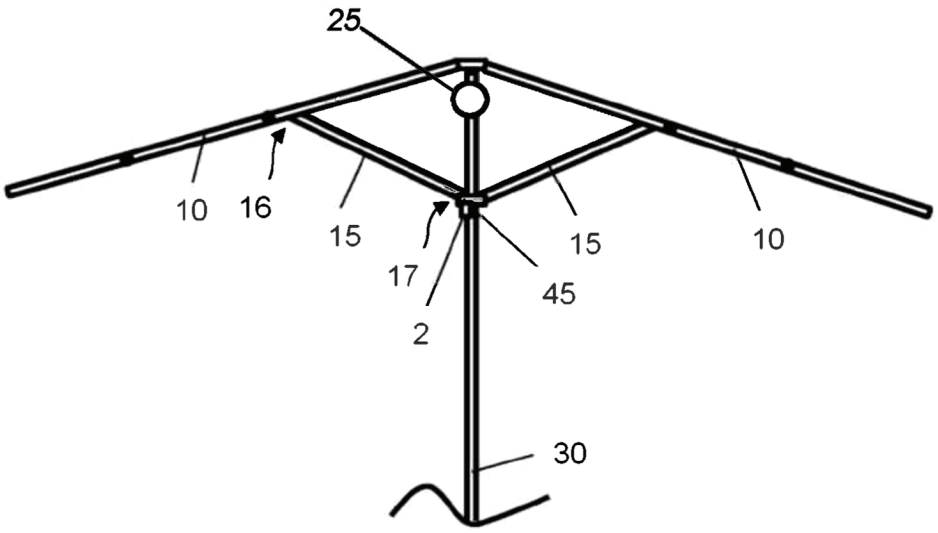


Fig. 4a
Amended

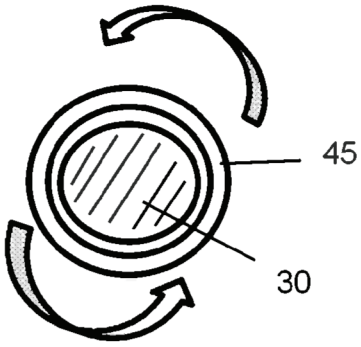


Fig. 4b

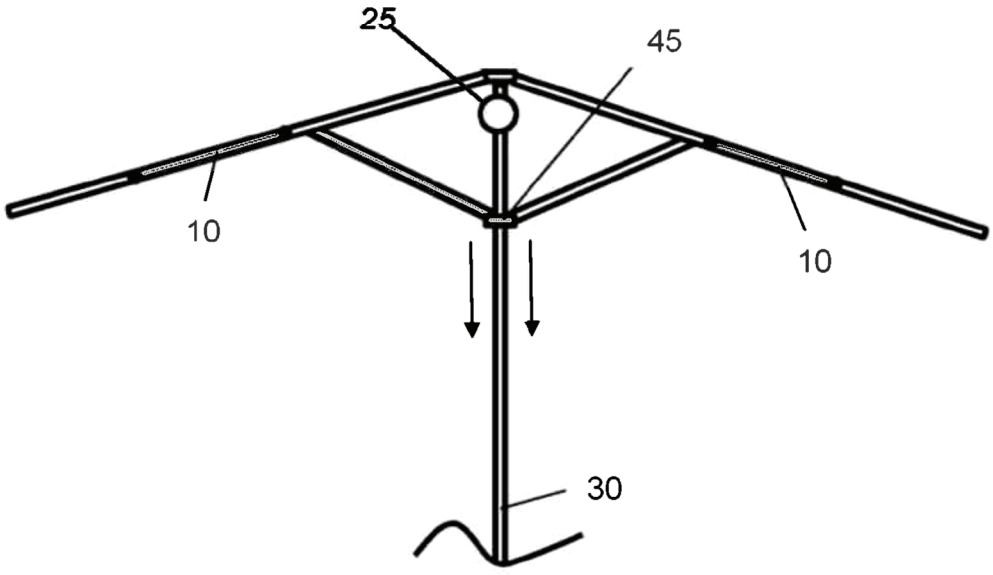


Fig. 4c

Amended

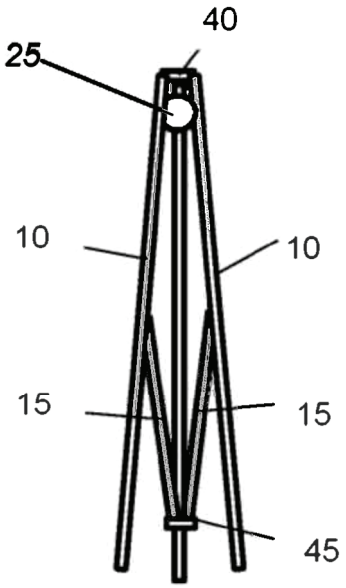


Fig. 4d
Amended

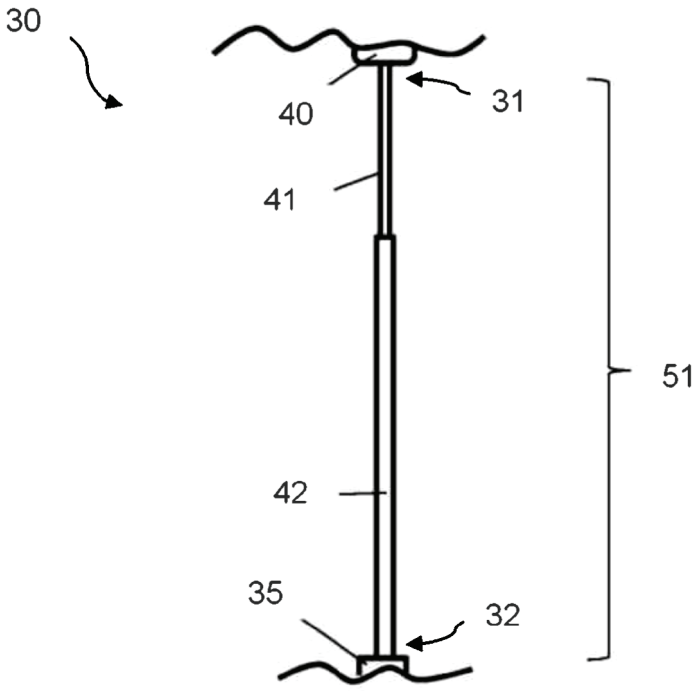


Fig. 5a

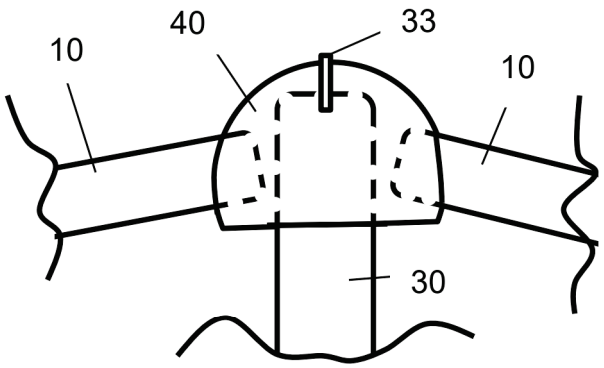


Fig. 5b

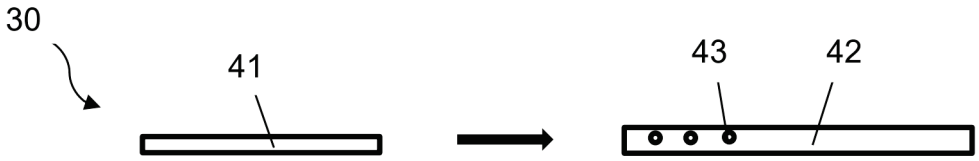


Fig. 5c

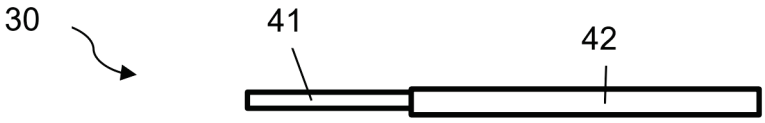


Fig. 5d

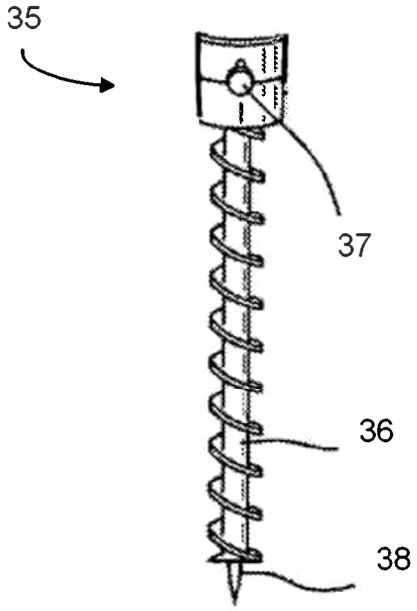


Fig. 6

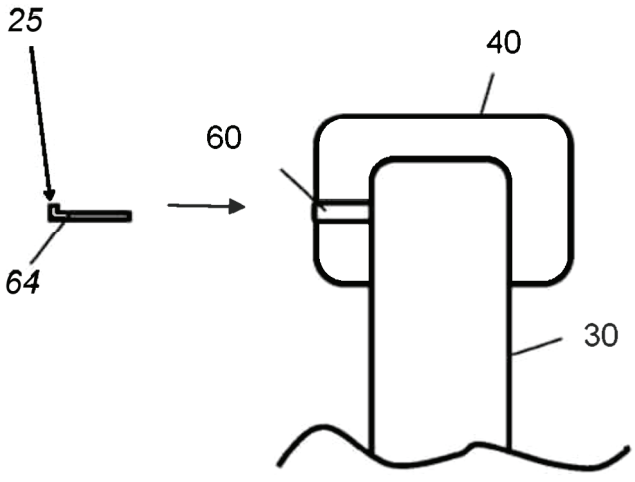


Fig. 7a

Amended

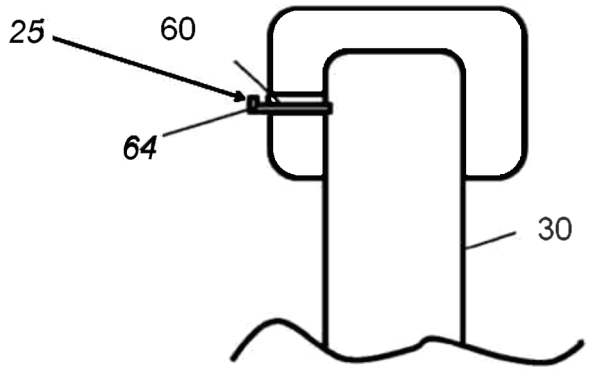


Fig. 7b
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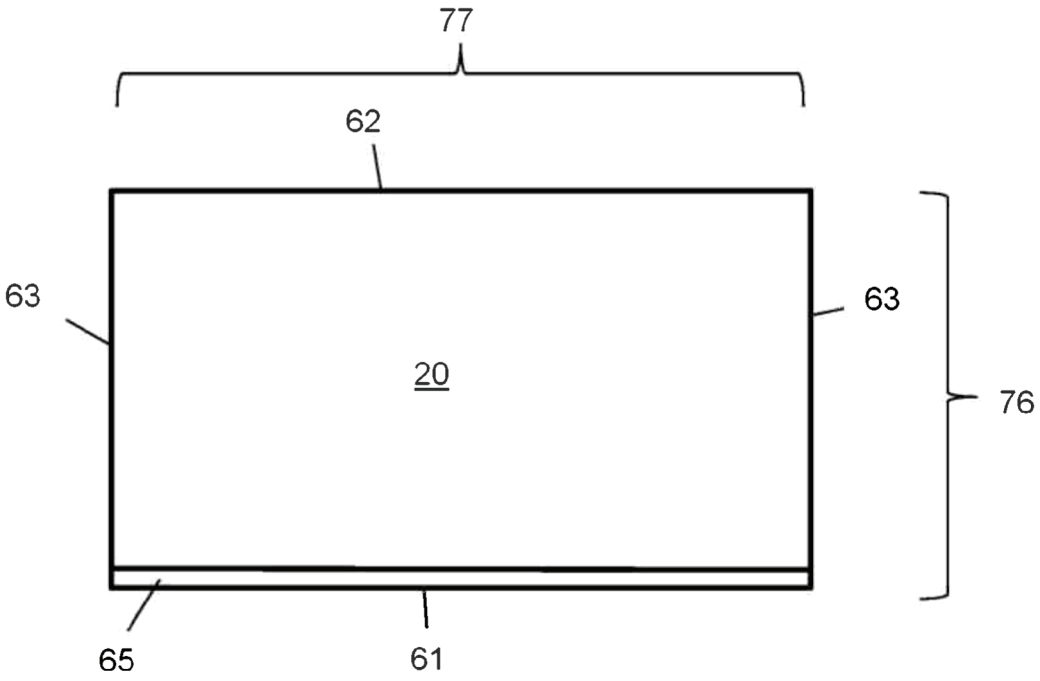


Fig. 8a
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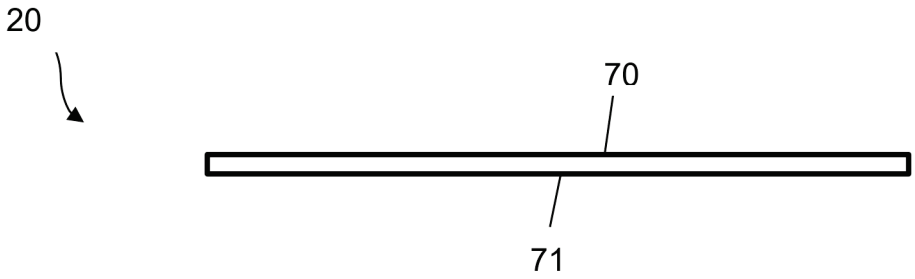


Fig. 8b

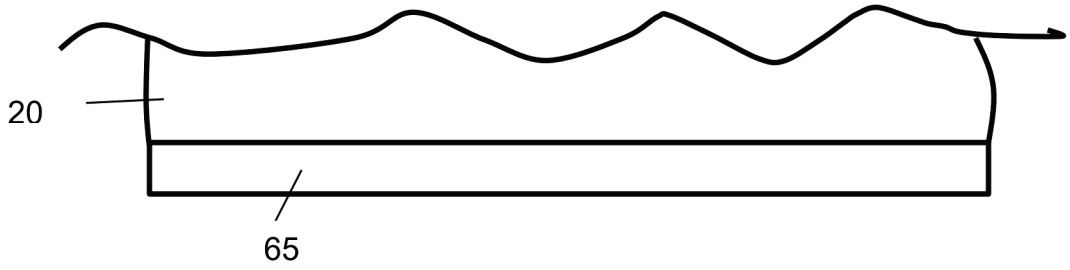


Fig. 8c

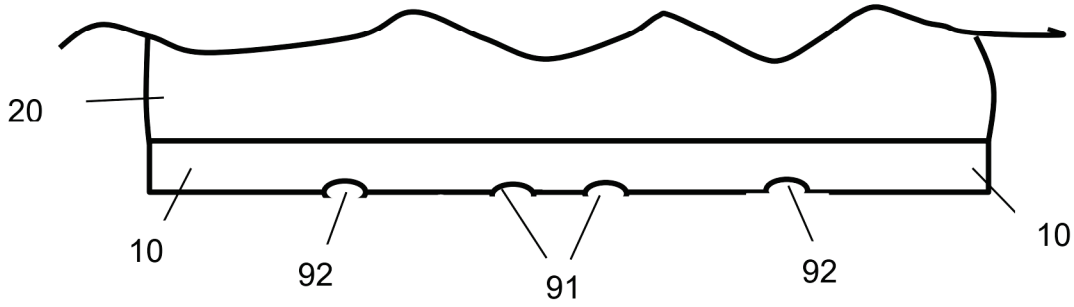


Fig. 8d

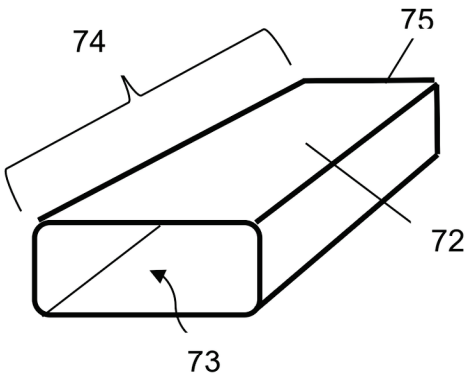


Fig. 8e

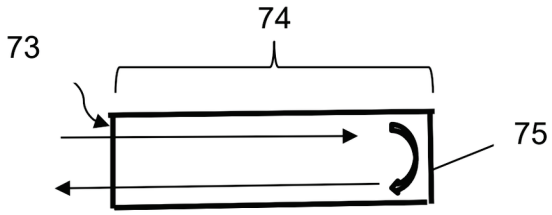


Fig. 8f

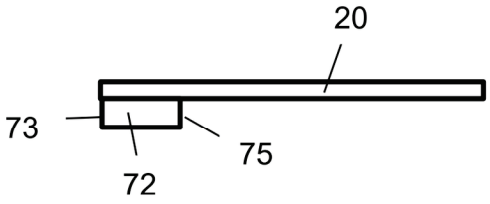


Fig. 8g

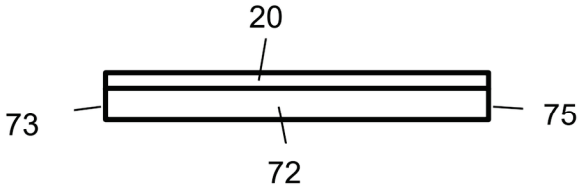


Fig. 8h

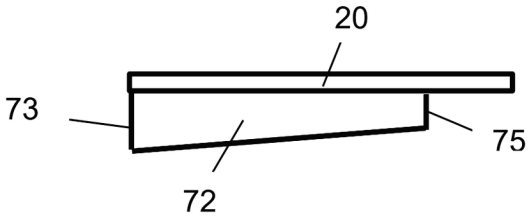


Fig. 8i

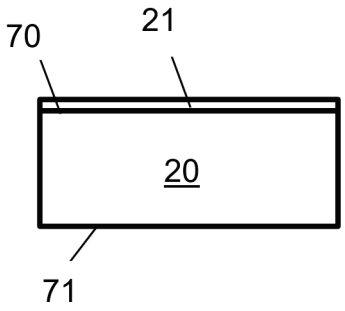


Fig. 9a

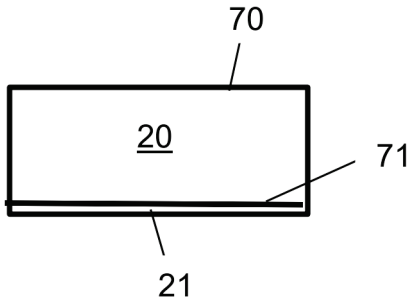


Fig. 9b

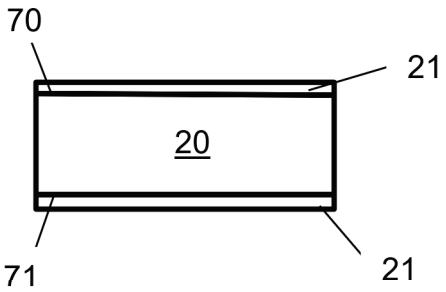


Fig. 9c

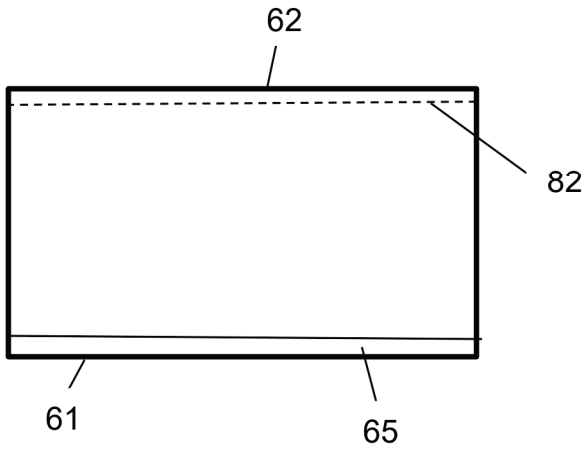


Fig. 9d

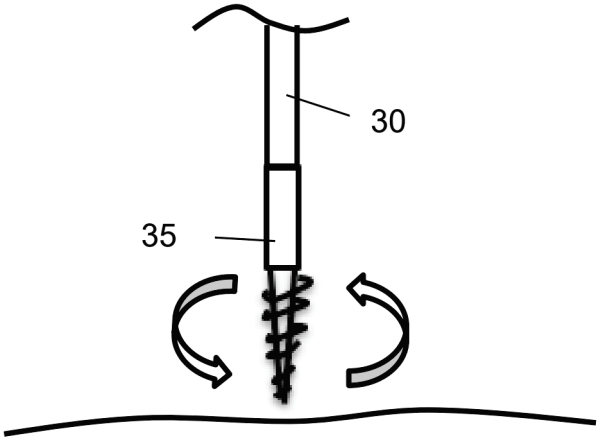


Fig. 10a

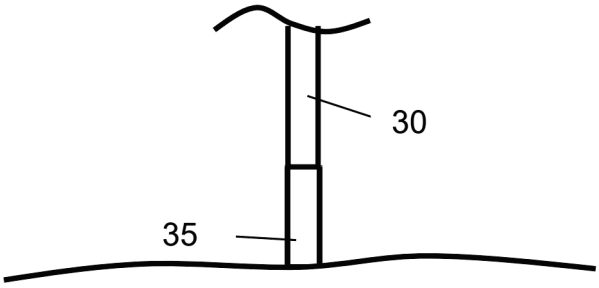


Fig. 10b

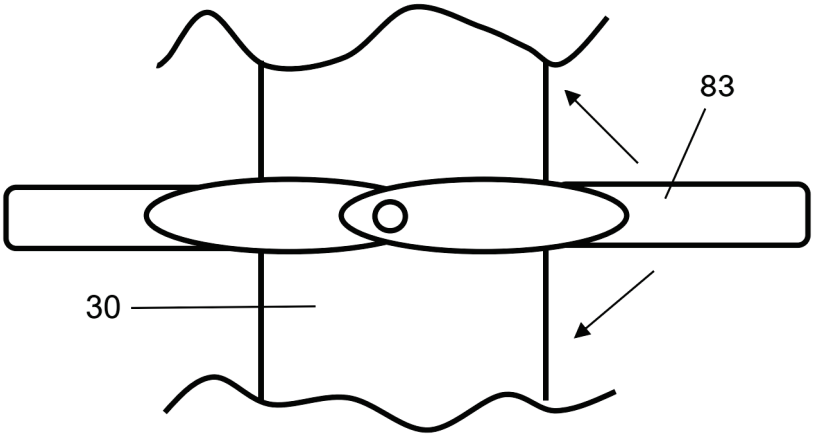


Fig. 10c

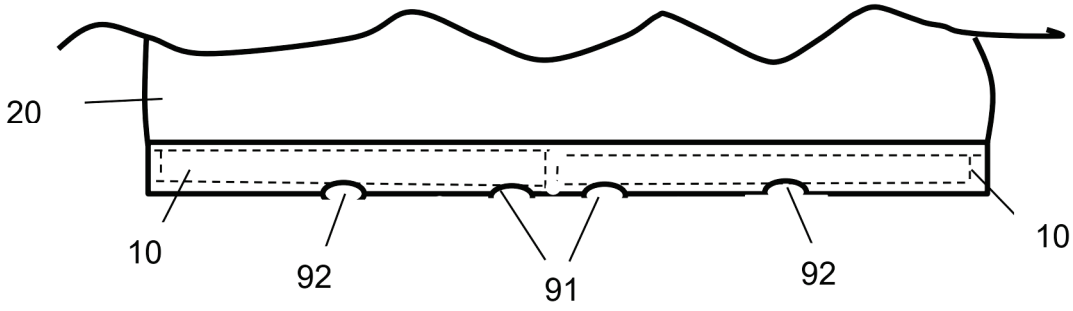


Fig. 10d

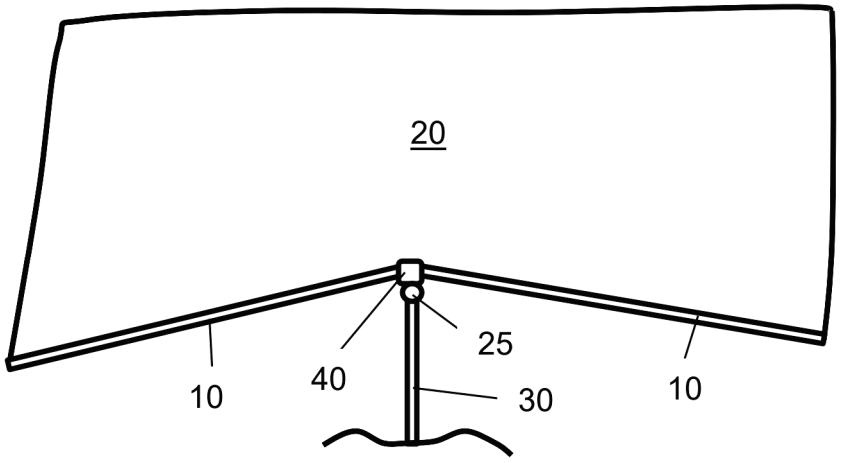


Fig. 10e

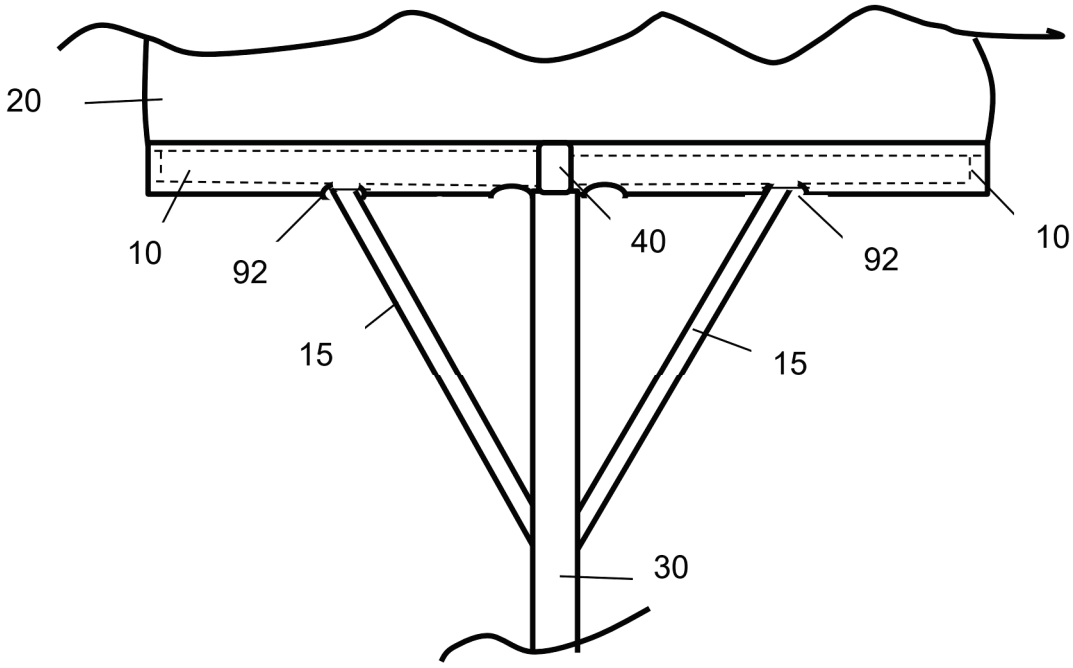


Fig. 10f

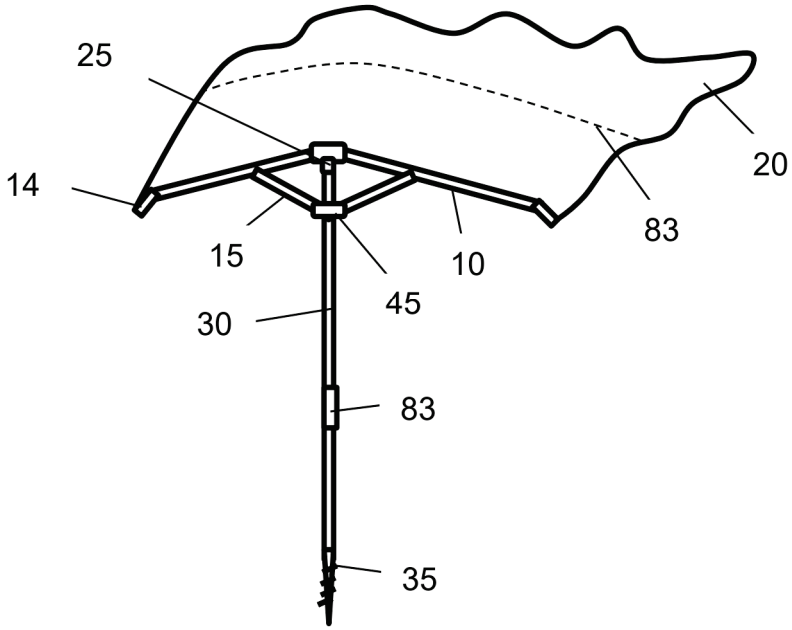


Fig. 10g

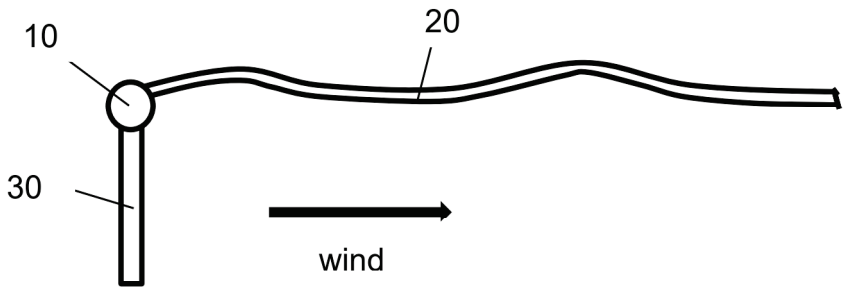


Fig. 10h

SELF-ADJUSTING SUN SHADE ASSEMBLY

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates the additions made by reissue; a claim printed with strikethrough indicates that the claim was canceled, disclaimed, or held invalid by a prior post-patent action or proceeding.

CROSS REFERENCE TO RELATED APPLICATIONS

[The present application] *This is an application for the reissue of U.S. Pat. No. 11,596,211, which granted on Mar. 7, 2023 from U.S. patent application Ser. No. 17/417,739, filed Jun. 22, 2020, and which* claims the benefit of U.S. Provisional Patent Application No. 62/892,700, filed Aug. 28, 2019, the entire content of which is incorporated by reference herein.

TECHNICAL FIELD

The presently disclosed subject matter is directed to a self-adjusting sun shade assembly and to methods of making and the using the same.

BACKGROUND

Beach umbrellas are used to create an area shaded from the sunlight beneath the umbrella canopy. They are particularly useful at the beach where there is generally a lack of trees or roofed structures to provide shade. Because the skin of the beachgoer is largely exposed at the beach, there is a greater need to provide protection from harmful ultraviolet rays, which may cause sunburn or melanomas. Many beachgoers also require some form of shade to minimize heat discomfort. The shade and shelter provided by a beach umbrella is also useful in protecting the user's valuables and shielding perishable items from direct sunlight. Conventional beach umbrellas include a single central support pole with a pointed lower end that is inserted directly into the sand. Conventional umbrellas further include an overhead fabric covering attached to the support pole. However, the main problem with the canopy design of traditional umbrellas is that the position of the umbrella constantly shifts in response to wind gusts. As a result, the user must frequently readjust the umbrella to compensate for the shifts in movement. In addition, conventional umbrellas can easily tip over or be blown down the beach where they can cause hassle to the owner as well as injury to other beachgoers. Conventional umbrellas are also prone to wind breakage. It would therefore be beneficial to provide an umbrella with improved stability in response to the wind blowing. It would further be beneficial if the umbrella self-adjusted to the wind to prevent or reduce the likelihood of tipping over.

SUMMARY

In some embodiments, the presently disclosed subject matter is directed to a sun shade assembly (e.g., an assembly that provides shade from the sun). The assembly comprises a pair of ribs defined by a first end and a second end, wherein the first end of each rib is attached to a pivot cap. The assembly further includes a sail with a front edge comprising a channel sized and shaped to house each rib such that the ribs extend across the edge. The assembly includes a mast comprising a first end and a second end, wherein the first end is operably connected to the pivot cap, wherein the pivot cap can freely rotate about the mast. The assembly comprises at least one support arm with a first end and a second end, wherein the first end of the support arm is attached to a rib and the second end of the support arm is attached to a slider configured to move up and down the mast. The assembly comprises a tension adjuster that adjusts rotation of the pivot cap about the mast. The assembly comprises an anchor operably connected to the second end of the mast. The pivot cap, ribs, slider, and support arms are configured to rotate about the mast in response to blowing of the wind.

In some embodiments, the pivot cap rotates about the mast at an angle of about 0-360 degrees. In some embodiments, the pivot cap rotates about a top end of the mast (e.g., is configured to rotate about the top end of the mast).

In some embodiments, the ribs are configured at an angle of greater than 180 degrees relative to each other.

In some embodiments, one face of the pivot cap comprises a lock defined by a bridge comprising an opening and a slidable arm that moves to cover and expose the opening. A portion of sail material can be locked in between the bridge and slidable arm to lock it into position.

In some embodiments, the slider is configured as a collar that fits around the exterior circumference of the mast.

In some embodiments, the mast length is adjustable.

In some embodiments, the anchor is releasably attached to the second end of the mast.

In some embodiments, the anchor comprises an auger. The term "auger" refers to a member in which a spiral vane or multiple parallel vanes are provided about the perimeter of a shaft.

In some embodiments, the tension adjuster is configured to permit the pivot cap, slider, ribs, and support arms to freely rotate about the mast, not rotate about the mast, or any level of rotation therebetween. The pivot cap, slider, ribs, and support arms rotate as a single, attached unit.

In some embodiments, the sail channel comprises one or more apertures to facilitate insertion of the ribs into the channel.

In some embodiments, the sail channel comprises one or more apertures to allow direct contact between each rib and a corresponding support arm.

In some embodiments, the sail has a top face and a bottom face, and wherein the bottom face includes at least one conduit configured as a channel with an open mouth positioned adjacent to the channel, a closed back end, and a length parallel with the length of the sail.

In some embodiments, the sail has a top face and a bottom face and wherein at least one of the top or bottom faces comprises a coating.

In some embodiments, the sail has an opposed rear edge comprising an adjacent hem constructed from a durable material.

In some embodiments, the mast comprises at least one handle.

In some embodiments, the presently disclosed subject matter is directed to a method of using a sunshade. Particularly, the method comprises positioning the anchor of a sun shade assembly in a support surface. The sun shade assembly comprises: a pair of ribs defined by a first end and a second end, wherein the first end of each rib is attached to a pivot cap; a sail with a front edge comprising a channel sized and shaped to house each rib such that the ribs extend across the edge; a mast comprising a first end and a second end, wherein the first end is operably connected to the pivot cap, wherein the pivot cap can freely rotate about the mast;

at least one support arm with a first end and a second end, wherein the first end of the support arm is attached to a rib and the second end of the support arm is attached to a slider configured to move up and down the mast; a tension adjuster that adjusts rotation of the pivot cap about the mast; and an anchor operably connected to the second end of the mast. The method further includes adjusting the tension adjuster to achieve a desired amount of rotation of the pivot cap, ribs, support arms, slider, and sail relative to the non-movable mast. The sun shade assembly self-adjusts in response to the blowing of the wind.

In some embodiments, the tension adjuster can be adjusted to allow the pivot cap, slider, ribs, and support arms to freely rotate about the mast, not rotate about the mast, or any level of rotation therebetween.

In some embodiments, the sail has a top face and a bottom face, and wherein the bottom face includes at least one conduit configured as a channel with an open mouth positioned adjacent to the channel, a closed back end, and a length parallel with the length of the sail.

In some embodiments, one face of the pivot cap comprises a lock defined by a bridge comprising and opening and a slidable arm that moves to cover and expose the opening.

In some embodiments, the sail has an opposed rear edge comprising an adjacent hem constructed from a durable material.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a front plan view of an sun shade assembly in accordance with some embodiments of the presently disclosed subject matter.

FIG. **2**a is a front plan view of an assembly rib in accordance with some embodiments of the presently disclosed subject matter.

FIGS. **2**b and **2**c are front plan views illustrating the folding of a rib in accordance with some embodiments of the presently disclosed subject matter.

FIG. **2**d is a front plan view illustrating the angle of separation of two ribs in accordance with some embodiments of the presently disclosed subject matter.

FIG. **2**e is a front plan view of folded ribs separated by a pivot cap in accordance with some embodiments of the presently disclosed subject matter.

FIG. **2**f is a front plan view illustrating ribs comprising extension in accordance with some embodiments of the presently disclosed subject matter.

FIG. **3**a is a front plan view of a pivot cap in accordance with some embodiments of the presently disclosed subject matter.

FIG. **3**b is a top plan view of a pivot cap in use in accordance with some embodiments of the presently disclosed subject matter.

FIG. **3**c is a top plan view of a pivot cap comprising a bridge and sliding arm in accordance with some embodiments of the presently disclosed subject matter.

FIGS. **3**d-**3**g are side plan view of a pivot cap bridge and arm in use in accordance with some embodiments of the presently disclosed subject matter.

FIG. **4**a is a top plan view of a slider configurated around a mast in accordance with some embodiments of the presently disclosed subject matter.

FIG. **4**b is a front plan view of a mast comprising a slider in accordance with some embodiments of the presently disclosed subject matter.

FIGS. **4**c-**4**d are front plan views illustrating use of a slider to adjust the position of one or more support arms in accordance with some embodiments of the presently disclosed subject matter.

FIG. **5**a is a front plan view of a mast in accordance with some embodiments of the presently disclosed subject matter.

FIG. **5**b is a front plan view of a pivot cap FIG. **6**a is a front plan view of a mast in accordance with some embodiments of the presently disclosed subject matter.

FIGS. **5**c and **5**d are side plan views illustrating a telescoping mast in accordance with some embodiments of the presently disclosed subject matter.

FIG. **6** is a perspective view of an anchor in accordance with some embodiments of the presently disclosed subject matter.

FIGS. **7**a and **7**b are cross-sectional views of a tension adjuster in use in accordance with some embodiments of the presently disclosed subject matter.

FIG. **8**a is a top plan view of a sail in accordance with some embodiments of the presently disclosed subject matter.

FIG. **8**b is a front plan view of a sail in accordance with some embodiments of the presently disclosed subject matter.

FIG. **8**c is a fragmentary top plan view of a sail channel in accordance with some embodiments of the presently disclosed subject matter.

FIG. **8**d is a fragmentary top plan view of a sail channel comprising a plurality of apertures in accordance with some embodiments of the presently disclosed subject matter.

FIG. **8**e is a perspective view illustrating a sail conduit in accordance with some embodiments of the presently disclosed subject matter.

FIG. **8**f is a side plan view of a sail conduit in accordance with some embodiments of the presently disclosed subject matter.

FIGS. **8**g-**8**i are side plan views of sail conduits in accordance with some embodiments of the presently disclosed subject matter.

FIGS. **9**a-**9**c are cross-sectional views of sail coating arrangements in accordance with some embodiments of the presently disclosed subject matter.

FIG. **9**d is a top plan view of a sail with a rear hem in accordance with some embodiments of the presently disclosed subject matter.

FIGS. **10**a and **10**b illustrate one method of inserting an anchor into a support surface in accordance with some embodiments of the presently disclosed subject matter.

FIG. **10**c is a front plan view of mast handles in accordance with some embodiments of the presently disclosed subject matter.

FIG. **10**d is a fragmentary top plan view of a sail channel comprising ribs in accordance with some embodiments of the presently disclosed subject matter.

FIG. **10**e is a front plan view of a sail positioned on ribs and a mast in accordance with some embodiments of the presently disclosed subject matter.

FIG. **10**f is a front plan view of an assembly with side arms attached to the mast and ribs in accordance with some embodiments of the presently disclosed subject matter.

FIG. **10**g is a front plan view of an assembly with a sail extended in the direction of the wind in accordance with some embodiments of the presently disclosed subject matter.

FIG. **10**h is a side plan view of a sail extended in the direction of the wind in accordance with some embodiments of the presently disclosed subject matter.

DETAILED DESCRIPTION

The presently disclosed subject matter is introduced with sufficient details to provide an understanding of one or more

particular embodiments of broader inventive subject matters. The descriptions expound upon and exemplify features of those embodiments without limiting the inventive subject matters to the explicitly described embodiments and features. Considerations in view of these descriptions will likely give rise to additional and similar embodiments and features without departing from the scope of the presently disclosed subject matter.

Unless defined otherwise, all technical and scientific terms used herein have the same meaning as commonly understood to one of ordinary skill in the art to which the presently disclosed subject matter pertains. Although any methods, devices, and materials similar or equivalent to those described herein can be used in the practice or testing of the presently disclosed subject matter, representative methods, devices, and materials are now described.

Following long-standing patent law convention, the terms "a", "an", and "the" refer to "one or more" when used in the subject specification, including the claims. Thus, for example, reference to "a device" can include a plurality of such devices, and so forth. It will be further understood that the terms "comprises," "comprising," "includes," and/or "including" when used herein specify the presence of stated features, integers, steps, operations, elements, and/or components, but do not preclude the presence or addition of one or more other features, integers, steps, operations, elements, components, and/or groups thereof.

Unless otherwise indicated, all numbers expressing quantities of components, conditions, and so forth used in the specification and claims are to be understood as being modified in all instances by the term "about". Accordingly, unless indicated to the contrary, the numerical parameters set forth in the instant specification and attached claims are approximations that can vary depending upon the desired properties sought to be obtained by the presently disclosed subject matter.

As used herein, the term "about", when referring to a value or to an amount of mass, weight, time, volume, concentration, and/or percentage can encompass variations of, in some embodiments+/–20%, in some embodiments+/–10%, in some embodiments+/–5%, in some embodiments+/–1%, in some embodiments+/–0.5%, and in some embodiments+/–0.1%, from the specified amount, as such variations are appropriate in the disclosed packages and methods.

As used herein, the term "and/or" includes any and all combinations of one or more of the associated listed items.

Relative terms such as "below" or "above" or "upper" or "lower" or "horizontal" or "vertical" may be used herein to describe a relationship of one element, layer, or region to another element, layer, or region as illustrated in the drawing figures. It will be understood that these terms and those discussed above are intended to encompass different orientations of the device in addition to the orientation depicted in the drawing figures.

The embodiments set forth below represent the necessary information to enable those skilled in the art to practice the embodiments and illustrate the best mode of practicing the embodiments. Upon reading the following description in light of the accompanying drawing figures, those skilled in the art will understand the concepts of the disclosure and will recognize applications of these concepts not particularly addressed herein. It should be understood that these concepts and applications fall within the scope of the disclosure and the accompanying claims.

FIG. **1** illustrates one embodiment of sun shade assembly **5**. Particularly, the assembly includes sail **20** that releasably attaches to a pair of ribs **10**, providing shade to the user. At least one support arm **15** can be used to reinforce ribs **10**. Mast **30** provides height to the assembly and includes anchor **35** *located at its bottom end* that allows the assembly to be secured into a support surface (e.g., sand). The ribs and support arms rotate about the mast, thereby self-adjusting the direction of sail **20** in response to the wind blowing, as described in more detail below. The assembly further includes tension adjuster **25** (*e.g., FIGS. 7a and 7b*) that can be tightened or loosed to control the rotation of the ribs and support arms in response to wind conditions. *The tension adjuster 25 is also shown diagrammatically in FIGS. 1, 4a, 4c, and 4d, and is discussed further below.*

FIG. **2**a illustrates one embodiment of rib **10**. As shown, the rib includes first end **11** and second end **12**. In some embodiments, the ribs can each include one or more joints **13** that can be folded, allowing the ribs to be easily stored when not in use, as illustrated in FIGS. **2**b and **2**c. Any mechanism can be used to fold the ribs, such as (but not limited to) hinges, joints, and the like. For example, a living hinge, a barrel hinge, spring hinge, butterfly hinge, flag hinge, H hinge, or any other pivotable member can be used.

The term "living hinge" refers to a hinge integrally formed with two opposite portions of the same material. The term "barrel hinge" refers to a sectional barrel secured by a pivot. The term "spring hinge" refers to a spring-loaded hinge that applies force to secure the hinge in an open or closed configuration. "Butterfly hinge" refers to dovetail or parliament hinges. The term "flag hinge" refers to hinges that can be taken apart with a fixed pin on one leaf, manufactured in a right-hand or left-hand configuration. An "H hinge" refers to a hinge shaped like an "H."

However, in some embodiments, the ribs are non-foldable and remain in the fully extended state, even during storage.

The ribs can be slightly offset relative to each other (e.g., are not 180 degrees apart). The offset nature allows the ribs to compensate for stretching of the sail. For example, in some embodiments, the angle **[16]** *"A"* between ribs **10** can be about 180-300 degrees, as shown in FIG. **2**d. Thus, the angle between ribs **10** can be at least/no more than about 180, 185, 190, 195, 200, 205, 210, 215, 220, 225, 230, 235, 240, 245, 250, 255, 260, 265, 270, 275, 280, 285, or 290 degrees. It should be appreciated that angle **16** is not limited and can be larger or smaller than the range set forth herein. The ribs can be fully folded, such as in a storage position, as shown in FIG. **2**e.

In some embodiments, rib **10** can include extension **14** as shown in FIG. **2**f. The extensions provide a decorative look the assembly when the sail is attached. Each extension can be attached to rib second end **12** using any desired method (e.g., adhesive, welding, clips, clamps, hinges, screws, bolts, magnets, etc.). It should be appreciated that extension **14** is optional.

Ribs **10** can have any desired length. For example, suitable lengths can include (but are not limited to) about 3-10 feet. Thus, the ribs can have a length of at least about (or no more than about) 3, 3.5, 4, 4.5, 5, 5.5, 6, 6.5, 7, 7.5, 8, 8.5, 9, 9.5, or 10 feet. However, the presently disclosed subject matter is not limited the length of each rib can be larger or smaller than the range given herein.

The ribs are joined using pivot cap **40**, as illustrated in FIG. **3**a. The pivot cap joins ribs **10** and enables rotation of the ribs about mast **30**. Thus, the pivot cap can freely rotate about the mast in response to wind conditions, as discussed in more detail below and as shown in FIG. **3**b. The ribs can rotate in a clockwise or counterclockwise direction, depending on the wind direction. It should be appreciated that the

ribs can join to pivot cap **40** using any mechanism (e.g., screws, bolts, clips, hinges, welding, adhesive, magnets, and the like).

In some embodiments, one face of pivot cap **40** includes bridge **94** comprising opening **93** and slidable arm **95** that can be used to releasably lock the sail into proper position, as shown in FIGS. **3**c-**3**e. Particularly, a portion of the sail can be inserted into opening **[94]** *93*. Arm **95** can then be slid to trap the portion of the sail over the bridge, as shown in FIGS. **3**f and **3**g. Thus, a portion of the sail is trapped between the bridge and the arm. To release the sail, the arm can be slid to expose opening **93**, thereby allowing the sail to be removed. The term "bridge" refers to any device that has a raised portion with an opening configured therein. In some embodiments, the arm can fully surround at least a segment of the raised bridge portion.

As shown in FIG. **4**a, the assembly can include one or more support arms **15** that provide stability to the ribs, allowing the assembly to support the sail even in high wind conditions. Each support arm includes first end **16** attached to rib **10** and second end **17** attached to slider **45**. The support arms can be attached to the rib and slider using any known mechanism, such as the use of adhesives, welding, magnets, mechanical elements (screws, bolts, clips), and the like. In some embodiments, the support arms are hingedly attached to the ribs and/or slider to allow for easy transitioning between positions.

Slider **45** can move along mast **30** to fold or unfold the ribs and support arms. In some embodiments, the slider can be configured as a collar that fits about the outer circumference of mast **30**, as shown in FIG. **4**b. The inner circumference of slider **45** is therefore at least slightly larger than the outer circumference of mast **30**. In this way, the slider and support arms can rotate freely about the mast. Particularly, the mast remains in a stationary position, while the slider (and attached support arms and ribs) rotate in response to the wind blowing. The slider can rotate in any direction (e.g., clockwise and counterclockwise).

The slider can include retention element **2** to keep it from sliding down the length of the mast. The retention element can include any device that retains the slider in a desired position on the mast, such as (but not limited to) a removable ledge with an outer circumference larger than the inner circumference of the slider, clips, pins, clasps, and the like. The retention element therefore locks the slider at a desired location along the mast. In this way, the ribs and support arms can be maintained in the open configuration without the slider slipping to a lower position. Likewise, the slider can also be locked in a lower "storage" configuration along the mast (or any location therebetween).

The slider can also be used to fold the ribs and support arms, such as when the assembly is transitioned to a storage configuration (e.g., not in use). When the slider is in an upper position on the mast, the support arms and ribs are unfolded outward and thus sail **20** is unfolded, as shown in FIG. **4**a. When the slider moves to a lower position on the mast, the support arms and ribs are folded to the storage position, as shown in FIGS. **4**c and **4**d. Therefore, the slider can travel on the mast in an upward direction to extend the ribs and support arms to a fully open configuration. The slider can also move downward along the mast to transition the ribs and support arms into a folded position.

Ribs **10** and support arms **15** can have any desired cross-sectional shape. For example, the ribs and support arms can be configured with a circular, oval, square, rectangular, triangular, pentagonal, hexagonal, octagonal, heart, diamond, or abstract cross-sectional shape.

As set forth above, assembly **5** comprises mast **30** that reinforces ribs **10** and support arms **15**, as well as provides height to the assembly, as shown in FIG. **5**a. The mast further provides a base about which the ribs can rotate via pivot cap **40**. The mast includes first end **31** operatively attached to pivot cap **40** and second end **32** attached to anchor **35**. The mast can be permanently or releasably attached to the pivot cap and/or anchor.

The pivot cap is attached to mast first end **31** using any known method. For example, a screw, bolt, or other element **33** can be threaded through the pivot cap, extending into the mast as shown in FIG. **5**b. In this way, the pivot cap attaches to the mast and still can rotate freely in a clockwise or counterclockwise direction. The pivot cap can have any desired shape and is not limited to the embodiment shown in FIG. **5**b. Attachment of the pivot cap to the mast is further not limited.

Mast **30** includes length **51** that in some embodiments can be adjusted as desired by the user. For example, the mast can include telescoping inner and outer tubes **41**, **42**. The term "telescoping" refers to a mechanical action of at least two longitudinal bodies of congruent cross-sections sliding relative to each other along a common longitudinal axis. As shown in FIGS. **5**c-**5**d, inner tube **41** can be at least partially slidably disposed into the interior of outer tube **42**. Specifically, the diameter of the outer tube is larger than the diameter of the inner tube such that the inner tube can be housed within the interior of the outer tube. The mast can include any number of telescoping tubes. A locking pin can pass through one or more holes **43** configured in the outer tube to hold the mast at the desired length. Alternatively, the inner and outer tubes can cooperate with a locking screw to secure the mast height. It should be appreciated that the length of the mast can be locked using any known element, such as friction fit, screw fit, snap-fit, screws, bolts, and the like.

It should further be appreciated that the length of the mast can be adjusted using any known mechanism and is not limited to a telescoping arrangement. For example, the mast can include a plurality of segments that can be added or removed as desired to achieve a suitable height. In other embodiments, the length of mast **30** is not adjustable.

Mast **30** can have any desired cross-sectional shape. For example, the mast can be configured with a circular, oval, square, rectangular, triangular, pentagonal, hexagonal, octagonal, heart, diamond, or abstract cross-sectional shape.

Second end **32** of the mast is operatively connected to anchor **35**. The term "anchor" broadly refers to any element that provides weight and/or a mechanism by which to secure assembly **5** into a support surface (e.g., sand). The anchor can be permanently attached to mast **30** using adhesives, welding, and the like. Alternatively, the anchor can be releasably attached to the mast using any of a wide variety of mechanical elements (e.g., screw knob **37**). A releasably attached anchor allows for the replacement of the anchor depending on use conditions (e.g., beach sand versus grass or rock).

FIG. **6** illustrates one embodiment of anchor **35** comprising auger **36** that can be configured as any type of spike, helical corkscrew, or shaft optionally having a threaded portion capable of being turned and embedding itself into a support surface (e.g., sand at a beach). Lower end **38** of the auger can be configured as a spike or pointed end to initiate insertion of the anchor into the support surface. Because auger **36** is inserted into a support surface, it does not rotate and remains in the inserted position until the user desires to

remove it. Likewise, the mast does not rotate in response to wind conditions due to its attachment to the anchor.

The disclosed assembly further includes tension adjuster **25** that allows a user to adjust the tension on the pivot cap *40* relative to the mast *30* easily and safely. In this way, a user can alter the amount of rotation ribs **10**, support arms **15** and slider **45** have about mast **30** in response to wind conditions. The tension adjuster *25* can be generally located *within or* adjacent to the pivot cap *40*. The tension adjuster **[**is also attached to**]** *25 engages the* mast **30** using any known mechanism (e.g., screws, bolts, clips, etc.).

As described above, the pivot cap (and attached ribs, slider, and support arms) can freely rotate about the mast in response to the wind blowing. The tension adjuster can be tightened as desired by the user (e.g., when the wind is shifting back and forth) to stop or limit rotation of the pivot cap (and ribs, support arm, and slider) about the mast to maintain a more balanced assembly. For example, in some embodiments, the tension adjuster can be loosened to allow the pivot cap, ribs, support arms, and slider to freely rotate (e.g., 360 degrees) about the mast. In other embodiments, the pivot cap, ribs, slider, and support arms have a more limited freedom to rotate (e.g., it takes a stronger gust of wind to rotate). In some embodiments, the tension adjuster can be fully tightened such that the ribs, slider, and support arms cannot rotate relative to the mast.

Tension adjuster **25** can have any desired configuration that allows a user to control the level of movement of the **[**tension**]** *pivot* cap *40* relative to the mast *30*. For example, in some embodiments, the tension adjuster *25* can include passageway **60** with actuator **[65]** *64* (e.g., lever or screw) capable of contacting pivot cap **40**, as shown in FIGS. **7**a and **7**b. Adjusting the actuator *64* through the passageway *60* will increase or decrease the tension on the pivot cap *40*. Specifically, if the actuator *64* is tightened to fully contact the pivot cap *40*, the pivot cap *40* will be incapable of moving relative to the mast *30*. Alternatively, if the actuator *64* is loosened such that it does not fully contact or press against the mast *30*, the pivot cap *40* is free to rotate. Any degree of actuator tightening can therefore adjust the level of pivot cap rotation.

The tension adjuster can have any known configuration and is not limited to the embodiment described above. For example, the tension adjuster can apply a force parallel, at an angle, or perpendicular to the tension it creates. The force can be generated by any known method, such as fixed displacement, stretching/compression of a spring, changing the volume of a gas, hydraulic pressure, or gravity. Tension adjuster **25** can therefore include any device that applies a force to create or maintain tension.

Further, actuator **[65]** *64* can have any known configuration, such as (but not limited to) a lever, wrench, key, screw, handle, knob, bolt, and the like.

The ribs, mast, support arms, pivot cap, tension adjuster, and anchor can be constructed from any desired material, such as (but not limited to) metal (e.g., aluminum, steel, brass, stainless steel, copper), plastic, wood, stone, or combinations thereof. In some embodiments, each element is constructed from the same material. In other embodiments, one element can be constructed from a material that differs from at least one other element.

Assembly **5** further includes sail **20** that cooperates with ribs **10**. As shown in FIGS. **8**a and **8**b, the sail can include *proximal* front edge **61**, *unrestrained free* rear edge **62**, and a pair of side edges **63**. The sail further includes top face **70** and bottom face **71**. *In exemplary embodiments, the entire surface area of the sail 20 is unrestrained from its proximal front edge 61 to the free rear edge 62, such that the sail 20 unfurls in response to blowing of the wind when the support arms 15 and ribs 10 are unfolded outward as shown in FIG. 4a. The support arms 15 and ribs 10 rotate together with the sail 20 to the direction of the blowing wind.*

Front edge **61** comprises channel **65** sized and shaped to house each rib **10**, as shown in FIG. **8**c. The front edge can be a straight edge, a curved edge, or have any known configuration. The ribs can be removed from channels **65** if desired by the user (e.g., to repair the sail or replace with a new sail). Channels **65** can be formed in the sail using any known method. For example, in some embodiments, the channel can be formed through sewing, welding, and the like. Such methods are well known in the art.

In some embodiments, each channel includes one or more apertures. For example, each channel can include apertures **91** sized and shaped to allow each rib to be inserted into channel **65**. The channel can further include one or more apertures **92** sized and shaped to allow each support arm to connect with the appropriate rib, as shown in FIG. **8**d. Apertures **91**, **92** can have any desired size and/or shape so long as they allow for insertion of a rib and/or connection of a support arm with a rib (e.g., through one or more screws, clips, and/or the like). Further, apertures **91**, **92** can be positioned at any suitable position in the channel.

Optionally, bottom face **71** of the sail can include at least one closed conduit **72** that provides a passageway for the flow of the wind during use. FIG. **8**e illustrates one embodiment of conduit **72** comprising open mouth **73** positioned adjacent to the sail front edge, length **74** and closed end **75**. FIG. **8**f illustrates the flow of wind (represented by the arrows) as it enters open mouth **73**, hits closed end **75** and then exits the open mouth. Conduit **72** provides added support for the sail, preventing or reducing excess flapping in the wind.

In some embodiments, the length of the conduit is the same as the length of the sail (i.e., the conduit extends the full length of the sail). In other embodiments, the conduit is configured to be shorter than the length of the sail, as shown in FIGS. **8**g and **8**h. In some embodiments, the thickness of the conduit can taper as it reaches closed end **75**, as shown in FIG. **8**i.

The conduit can have any cross-sectional shape, such as (but not limited to) square, rectangular, circular, oval, triangular, and the like.

In some embodiments, the sail can be formed as a single portion of material. In other embodiments, the sail can be constructed from two or more pieces of material joined together, such as by welding or sewing.

The sail can be configured in any desired shape, such as square, rectangular, rounded, oval, triangular, pentagonal, abstract, and the like. In some embodiments, the sail can include at least one straight edge to accommodate the channel.

The sail can further have any desired dimensions, such as length **77** and/or width **76** of about 3-20 feet (e.g., at least/no more than about 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, or 20 feet). In some embodiments, the sail can have an area of about 10-100 ft^2 (e.g., at least/no more than about 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, or 100 ft^2). However, the sail can be configured with dimensions outside the range given above. The term "length" refers to the distance in the longitudinal direction. The term "width" refers to the dimension perpendicular to the length.

Sail **20** can have any desired thickness, such as about 1 inch or less. Thus, the sail can have a thickness of about 1,

0.9, 0.8, 0.7, 0.6, 0.5, 0.4, 0.3, 0.2, 0.1, 0.01, 0.001 inches or less. However, the presently disclosed subject matter is not limited and the sail can have thickness of greater or less than the range given above.

Sail **20** can be constructed from any desired lightweight material. The term "lightweight material" refers to any material that is able to be lifted and carried by the wind (e.g., a wind speed of at least about 2-3 mph). Suitable materials can therefore include (but are not limited to) nylon, polyester, vinyl, rayon, canvas, acrylic fabric, cotton, or combinations thereof.

In some embodiments, the material(s) used to construct the sail can have a UPF (ultraviolet protection coefficient) rating of about 30 or more in accordance with ASTM D6544, incorporated by reference herein.

As shown in the cross-sectional views of FIGS. **9**a-**9**c, sail **20** can include coating **21** to reduce the noise level when the sail is moving in the wind. The coating can be positioned on the sail top and/or bottom surfaces. The coating can span the entire top and/or bottom surface or only a portion thereof.

In addition to coating **21**, the sail can optionally be calendared and/or treated with the application of heat/pressure to aid in the reduction of noise. The term "calendaring" refers to a method of passing the sail between calendar rolls at high temperature and/or pressure.

Coating **21** can comprise any material that would serve to reduce the amount of noise and/or movement of sail **20**. Suitable materials can therefore include (but are not limited to) urethane polyurethane, plastic (e.g., polyethylene), or combinations thereof. Coating **21** can have any thickness, such as about 0.0001 inches to about 0.1 inches. In some embodiments, the coating can impart a waterproof or water-resistant quality to sail **20**. The term "waterproof" refers to a material that is impervious to water. The term "water-resistant" refers to the ability of a material to resist the entry of water to some degree but not entirely.

In some embodiments, sail **20** can include hem **82** sewn or otherwise applied at or adjacent to rear edge **62**, as shown in FIG. **9**d. Hem **82** can be sewn with a durable material (e.g., monofilament nylon thread) to reduce the pliability of the sail, which aids in noise reduction and in the reduction of excess flapping in the wind. In some embodiments, hem **82** is in addition to any rear edge hem used to construct the sail (e.g., the rear edge can include an additional hem). It should be appreciated that hem **82** can be configured at any desired location.

In use, the disclosed umbrella assembly can be used to provide shade to one or more users. Anchor **35** is positioned in a support surface, such as sand at the beach. The anchor can be inserted into the ground using a twisting motion, which allows the auger to be easily buried, as shown in FIGS. **10**a and **10**b. In some embodiments, the mast can be manually rotated to insert the auger into the ground. In other embodiments, mast **30** can include one or more handles **83** that fold out to aid in screwing the auger into the ground, as illustrated in FIG. **10**c. In some embodiments, handles **83** can rotate up and down, flush with the mast as shown by the arrows. Thus, the handles fold into the mast when not in use and can be easily folded out when desired to insert the auger into a support surface. It should be appreciated that the handles can have any desired configuration.

Mast **30** can then be extended to a desired length to accommodate one or more users and their belongings. For example, inner and outer tubes **41** and **42** can be adjusted as needed to a desired length. In other embodiments, the mast is of a single length and need only be positioned and attached to the anchor.

Ribs **10** can then be inserted into channel **65** of the sail. In some embodiments, each rib is inserted into channel aperture **91** for proper placement in the channel. It should be appreciated that aperture **91** can be positioned at any location in channel **65**. For example, in some embodiments, each aperture **91** is positioned adjacent to the center of the channel (e.g., about 1-10 inches from the center point of the channel). Once the ribs are inserted into channel **65**, apertures **92** are properly positioned to allow support arms **15** to be attached to the ribs, as shown in FIG. **10**d. Particularly, the apertures provide an opening in the sail to allow the support arms to directly attach to the ribs. In this way, the support arms can be easily attached to the ribs.

The sail can then be secured into position via bridge **94** and arm **95** on the pivot cap, as shown in FIG. **10**e. For example, in some embodiments, the portion of the sail positioned between apertures **91** can be inserted into the bridge opening, and the arm then slid over to trap the sail material in position. In this way, the sail does not significantly shift out of proper position during use.

The support arms can then be attached to the ribs through channel apertures **92**, as shown in FIG. **10**f. Any known mechanism to secure the support arms to the ribs can be used. It should be appreciated that the opposing side of the support arms are secured to mast **30**.

It should be appreciated that the steps included above can be performed in any order.

If desired by the user, the tension adjuster can be set to lock the position of the ribs (e.g., no movement relative to the mast) or to limit movement. As the wind blows, the sail will move in response, blowing and extending outward providing shade to the user, as shown in FIGS. **10**g and **10**h. In some embodiments, the sail requires a wind speed of at least 2-3 miles per hour to flap or extend into the wind.

Because the support can rotate and adjust in response to the wind, the assembly has a reduced likelihood of falling over as a result heavy winds and/or when the wind shifts directions. Specifically, when the wind shifts direction, the sail will self-adjust (e.g. the pivot cap, ribs, sail, support arm, and slider rotate about the non-movable mast in response to the wind blowing and changing direction). In addition, because the sail rotates relative to the mast it prevents loosening the auger position and thereby causing failure of the assembly.

The disclosed assembly therefore offers many advantages over prior art systems. For example, because the sail consistently blows in response to the wind, the user's views are not blocked as is common with prior art umbrellas. As a result, users can keep an eye on children and the water at all times.

Further, the disclosed assembly allows the wind to self-adjust the direction of ribs **10** and sail **20**, saving the user the time and hassle of manually adjusting the assembly.

In addition, the assembly frame is designed to not fall over if the wind stops or changes direction by more than 90 degrees.

The frame of the assembly (e.g. mast) does not catch the wind. If the mast falls over, it typically falls straight to the ground and does not tumble down the beach.

The disclosed assembly is capable of being quickly assembled. Users can easily set up the umbrella assembly in about 40 seconds or less. Likewise, the assembly can be quickly and easily disassembled in about 40 seconds or less.

Current assemblies commonly make use of sandbags, requiring users to fill the bags with sand to weigh down the umbrella, which is messy, time consuming, and can be

hazardous if no shovel is available. Further, if wet sand is used, it is even more difficult to fill the bags.

Assembly **5** comprises a single mast, so it is universally permitted on beaches where tents are not.

The mast is typically not in the middle of the umbrella sitting area, thereby providing adding convenience to the user.

The disclosed assembly is quiet compared to other umbrellas and sun shades. Specifically, sail **20** does not loudly flap in the wind. Rather the sail stays extended by consistently floating in the direction of the wind.

Further, the disclosed system acts as an effective seagull deterrent. Because the sail is constantly changing directions in response to the wind, birds are deterred and tend to keep their distance.

As described above, although several embodiments of the present invention have been described for illustrative purposes, those skilled in the art will appreciate that various modifications, additions, and substitutions are possible without departing from the scope and spirit of the invention as disclosed in the accompanying claims.

What is claimed is:

[1. A sun shade assembly comprising:

a pair of ribs defined by a first end and a second end, wherein the first end of each rib is attached to a pivot cap;

a sail with a front edge comprising a channel sized and shaped to house each rib such that the ribs extend across the edge;

a mast comprising a first end and a second end, wherein the first end is operably connected to the pivot cap, wherein the pivot cap can freely rotate about the mast;

at least one support arm with a first end and a second end, wherein the first end of the support arm is attached to a rib and the second end of the support arm is attached to a slider configured to move up and down the mast; and

an anchor operably connected to the second end of the mast;

wherein the pivot cap, ribs, slider, and support arms are configured to rotate about the mast in response to blowing of the wind.**]**

[2. The assembly of claim **1**, wherein the pivot cap rotates about the mast at an angle of about 0-360 degrees.**]**

[3. The assembly of claim **1**, wherein the ribs are configured at an angle of greater than 180 degrees relative to each other.**]**

[4. The assembly of claim **1**, wherein one face of the pivot cap comprises a lock defined by a bridge comprising and opening and a slidable arm that moves to cover and expose the opening.**]**

[5. The assembly of claim **1**, wherein the slider is configured as a collar that fits around the exterior circumference of the mast.**]**

[6. The assembly of claim **1**, wherein the anchor is releasably attached to the second end of the mast.**]**

[7. The assembly of claim **1**, wherein the sail channel comprises one or more apertures to facilitate insertion of the ribs into the channel.**]**

[8. The assembly of claim **1**, wherein the sail channel comprises one or more apertures to allow direct contact between each rib and a corresponding support arm.**]**

[9. The assembly of claim **1**, wherein the sail has a top face and a bottom face, and wherein the bottom face includes at least one conduit configured as a channel with an open mouth positioned adjacent to the channel, a closed back end, and a length parallel with the length of the sail.**]**

[10. The assembly of claim **1**, wherein the sail has a top face and a bottom face and wherein at least one of the top or bottom faces comprises a coating.**]**

[11. The assembly of claim **1**, wherein the sail has an opposed rear edge comprising an adjacent hem constructed from a durable material.**]**

[12. The assembly of claim **1**, wherein the mast comprises at least one handle for gripping the mast.**]**

[13. The assembly of claim **1**, further comprising a tension adjuster that adjusts rotation of the pivot cap about the mast.**]**

[14. The assembly of claim **13**, wherein the tension adjuster is configured to permit the pivot cap, slider, ribs, and support arms to freely rotate about the mast, not rotate about the mast, or any level of rotation therebetween.**]**

[15. A method of using a sunshade, the method comprising:

positioning the anchor of a sun shade assembly in a support surface, wherein the sun shade assembly comprises:

a pair of ribs defined by a first end and a second end, wherein the first end of each rib is attached to a pivot cap;

a sail with a front edge comprising a channel sized and shaped to house each rib such that the ribs extend across the edge;

a mast comprising a first end and a second end, wherein the first end is operably connected to the pivot cap, wherein the pivot cap can freely rotate about the mast;

at least one support arm with a first end and a second end, wherein the first end of the support arm is attached to a rib and the second end of the support arm is attached to a slider configured to move up and down the mast; and

an anchor operably connected to the second end of the mast;

wherein the sun shade assembly self-adjusts in response to the blowing of the wind.**]**

[16. The method of claim **15**, wherein the sail has a top face and a bottom face, and wherein the bottom face includes at least one conduit configured as a channel with an open mouth positioned adjacent to the channel, a closed back end, and a length parallel with the length of the sail.**]**

[17. The method of claim **15**, wherein one face of the pivot cap comprises a lock defined by a bridge comprising and opening and a slidable arm that moves to cover and expose the opening.**]**

[18. The method of claim **15**, wherein the sail has an opposed rear edge comprising an adjacent hem constructed from a durable material.**]**

[19. The method of claim **15**, wherein the sunshade assembly further comprises a tension adjuster that adjusts rotation of the pivot cap about the mast, and

wherein the method further includes adjusting the tension adjuster to achieve a desired amount of rotation of the pivot cap, ribs, support arms, slider, and sail relative to the non-movable mast.**]**

[20. The method of claim **19**, wherein the tension adjuster can be adjusted to allow the pivot cap, slider, ribs, and support arms to freely rotate about the mast, not rotate about the mast, or any level of rotation therebetween.**]**

21. A sun shade assembly comprising:

a pair of ribs defined by a first end and a second end, wherein the first end of each rib is attached to a pivot cap;

a sail with a front edge comprising a channel sized and shaped to house each rib such that the ribs extend across the edge;

a mast comprising a first end and a second end, wherein the first end is operably connected to the pivot cap, wherein the pivot cap can freely rotate about the mast;

at least one support arm with a first end and a second end, wherein the first end of the support arm is attached to a rib and the second end of the support arm is attached to a slider configured to move up and down the mast; and

an anchor operably connected to the second end of the mast;

wherein the pivot cap, ribs, slider, and support arms are configured to rotate about the mast in response to blowing of the wind.

22. The assembly of claim 21, wherein the ribs are configured at an angle of greater than 180 degrees relative to each other.

23. The assembly of claim 21, wherein one face of the pivot cap comprises a lock defined by a bridge comprising and opening and a slidable arm that moves to cover and expose the opening.

24. The assembly of claim 21, wherein the slider is configured as a collar that fits around the exterior circumference of the mast.

25. The assembly of claim 21, wherein the anchor is releasably attached to the second end of the mast.

26. The assembly of claim 21, wherein the sail channel comprises one or more apertures to facilitate insertion of the ribs into the channel.

27. The assembly of claim 21, wherein the sail channel comprises one or more apertures to allow direct contact between each rib and a corresponding support arm.

28. The assembly of claim 21, wherein the sail has a top face and a bottom face, and wherein the bottom face includes at least one conduit configured as a channel with an open mouth positioned adjacent to the channel, a closed back end, and a length parallel with the length of the sail.

29. The assembly of claim 21, wherein the sail has a top face and a bottom face and wherein at least one of the top or bottom faces comprises a coating.

30. The assembly of claim 21, wherein the sail has an opposed rear edge comprising an adjacent hem constructed from a durable material.

31. The assembly of claim 21, wherein the mast comprises at least one handle for gripping the mast.

32. The assembly of claim 21, further comprising a tension adjuster that adjusts rotation of the pivot cap about the mast.

33. The assembly of claim 32, wherein the tension adjuster is configured to permit the pivot cap, slider, ribs, and support arms to freely rotate about the mast, not rotate about the mast, or any level of rotation therebetween.

34. A method of using a sunshade, the method comprising:

positioning an anchor of a sun shade assembly in a support surface, wherein the sun shade assembly comprises:

a pair of ribs defined by a first end and a second end, wherein the first end of each rib is attached to a pivot cap;

a sail with a front edge comprising a channel sized and shaped to house each rib such that the ribs extend across the edge;

a mast comprising a first end and a second end, wherein the first end is operably connected to the pivot cap, wherein the pivot cap can freely rotate about the mast;

at least one support arm with a first end and a second end, wherein the first end of the support arm is attached to a rib and the second end of the support arm is attached to a slider configured to move up and down the mast; and

the anchor operably connected to the second end of the mast;

wherein the sun shade assembly self-adjusts in response to the blowing of the wind.

35. The method of claim 34, wherein the sail has a top face and a bottom face, and wherein the bottom face includes at least one conduit configured as a channel with an open mouth positioned adjacent to the channel, a closed back end, and a length parallel with the length of the sail.

36. The method of claim 34, wherein one face of the pivot cap comprises a lock defined by a bridge comprising and opening and a slidable arm that moves to cover and expose the opening.

37. The method of claim 34, wherein the sail has an opposed rear edge comprising an adjacent hem constructed from a durable material.

38. The method of claim 34, wherein the sunshade assembly further comprises a tension adjuster that adjusts rotation of the pivot cap about the mast, and wherein the method further includes adjusting the tension adjuster to achieve a desired amount of rotation of the pivot cap, ribs, support arms, slider, and sail relative to the non-movable mast.

39. The method of claim 38, wherein the tension adjuster can be adjusted to allow the pivot cap, slider, ribs, and support arms to freely rotate about the mast, not rotate about the mast, or any level of rotation therebetween.

40. A sun shade assembly comprising:

a mast configured to extend upwardly from a supporting surface;

a pair of pivoted ribs carried by said mast and configured to rotate relative to the supporting surface, and said pivoted ribs adapted to lift outwardly from said mast at respective pivot points into an unfolded condition and to lower at respective pivot points from the unfolded condition to a folded condition alongside said mast;

a cap located at a top end of said mast, and wherein the first ends of said pivoted ribs are attached to said cap;

a sail having a proximal edge secured to each of said pivoted ribs, and an unrestrained free edge opposite the proximate edge;

whereby said sail is unfolded by lifting said pivot ribs outwardly from said mast from the folded condition into the unfolded condition such that the unrestrained free edge of said sail unfurls in response to blowing of the wind, and wherein said sail and ribs rotate together to a direction of the blowing wind; and

a tension adjuster adapted for adjusting pivot tension of said cap, thereby controlling rotation of said sail and ribs in response to blowing of the wind.

41. The assembly of claim 40, wherein said cap is adapted to rotate about said mast, such that said sail and pivoted ribs when unfolded rotate together at an angle from about 0 to 360 degrees in response to blowing of the wind.

42. The assembly of claim 40, and comprising an anchor located at a bottom end of said mast.

43. The assembly of claim 40, and comprising at least one handle for gripping said mast.

44. A sun shade assembly comprising:

a mast configured to extend upwardly from a supporting surface, and having a top end and a bottom end;

at least one rib located proximate the top end of said mast, and configured to rotate relative to the supporting surface;

a sail having a proximal edge secured to said rib and an unrestrained free edge adapted to unfurl in response to blowing of the wind, and wherein an entire surface area of said sail is unrestrained from the proximal edge to the free edge; and

when unfurled, said sail and rib are adapted to rotate together to a direction of the blowing wind.

45. The assembly of claim 44, wherein said at least one rib is attached to a cap located at the top end of said mast.

46. The assembly of claim 45, further comprising a tension adjuster adapted for adjusting pivot tension of said cap, thereby controlling rotation of said sail and rib in response to blowing of the wind.

47. The assembly of claim 44, and comprising an anchor located at the bottom end of said mast.

48. The assembly of claim 44, and comprising at least one handle for gripping said mast.

49. A sun shade assembly comprising:

a mast configured to extend upwardly from a supporting surface, and having a top end and a bottom end;

a pair of pivoted ribs pivotably attached proximate the top end of said mast, and configured to rotate relative to the supporting surface;

a sail having a proximal edge defining a channel sized and shaped to receive each of said pivoted ribs, and an unrestrained free edge adapted to unfurl in response to blowing of the wind;

a slider configured to move up and down said mast, and operatively actuating said pivoted ribs such:

(i) that raising said slider on said mast causes said pivoted ribs to open outwardly from a folded condition into an unfolded condition thereby unfolding said sail, such that when unfolded said sail unfurls in response to blowing of the wind and rotates together with said pivoted ribs to a direction of the blowing wind; and

(ii) lowering said slider on said mast causes said pivoted ribs to fold downwardly into the folded condition adjacent said mast, such that said sail is folded for storage.

50. A method of using a sunshade assembly, the method comprising:

extending a mast of the sunshade assembly upwardly from a supporting surface, the sunshade assembly further comprising a pair of pivoted ribs carried by the mast and configured to rotate relative to the supporting surface, and a sail having a proximal edge secured to each of the pivoted ribs and an unrestrained free edge opposite the proximate edge;

lifting the pivoted ribs outwardly from the mast at respective pivot points from a folded condition alongside the mast into an unfolded condition, such that in the unfolded condition the unrestrained free edge of the sail unfurls in response to blowing of the wind; and

when the sail is unfurled, enabling the sail and pivoted ribs to rotate together relative to the mast to a direction of the blowing wind.

51. The method according to claim 50, and comprising adjustably controlling rotation of the sail and pivoted ribs in response to blowing of the wind.

52. The method according to claim 50, and comprising lowering the pivoted ribs from the unfolded condition to the folded condition alongside the mast, thereby folding the sail for storage.

* * * * *

Exhibit C

#2259 Paid Fulfilled

December 1, 2022 at 12:05 pm from Online Store

Fulfilled (1) #2259-F1

Location
SOLBELLO

Fulfilled
December 2, 2022

391536135807 Delivered

Delivered on
Tuesday, December 06, 2022



Solbello $179.00 × 1 $179.00
BLUE / 8'
SKU: SOL1001BLU8'

Subtotal	1 item	$179.00
Shipping	Standard (4.5 lb)	$0.00
Total		**$179.00**
Paid by customer		$179.00

Customer

Shawn Carnes
1 order

Contact information

[redacted]

Shipping address

Shawn Carnes
1023 Redbird Road
Augusta GA 30904
United States

Billing address

Shawn Carnes
[redacted]
United States

Timeline

Today

Paul James Just now
SHORE SHADE!

December 6

Shipment delivered email was sent to Shawn Carnes ([redacted]). 5:26 PM

December 3

$173.51 USD was added to your **Dec 5, 2022** payout. 8:35 PM

December 2

ApparelMagic Cloud sent a shipping confirmation email to Shawn Carnes ([redacted]). 5:20 PM

ApparelMagic Cloud fulfilled 1 item from SOLBELLO. 5:20 PM

December 1

Order confirmation email was sent to Shawn Carnes ([redacted]). 12:05 PM

$173.51 USD will be added to your Dec 5, 2022 payout. 12:05 PM

$179.00 USD was captured using a Mastercard ending in [redacted]. 12:05 PM

$179.00 USD was authorized using a Mastercard ending in [redacted]. 12:05 PM

Confirmation #RNWTGQHVJ was generated for this order. 12:05 PM

Shawn Carnes placed this order on Online Store. 12:05 PM

Exhibit D

Sensational Sunshades

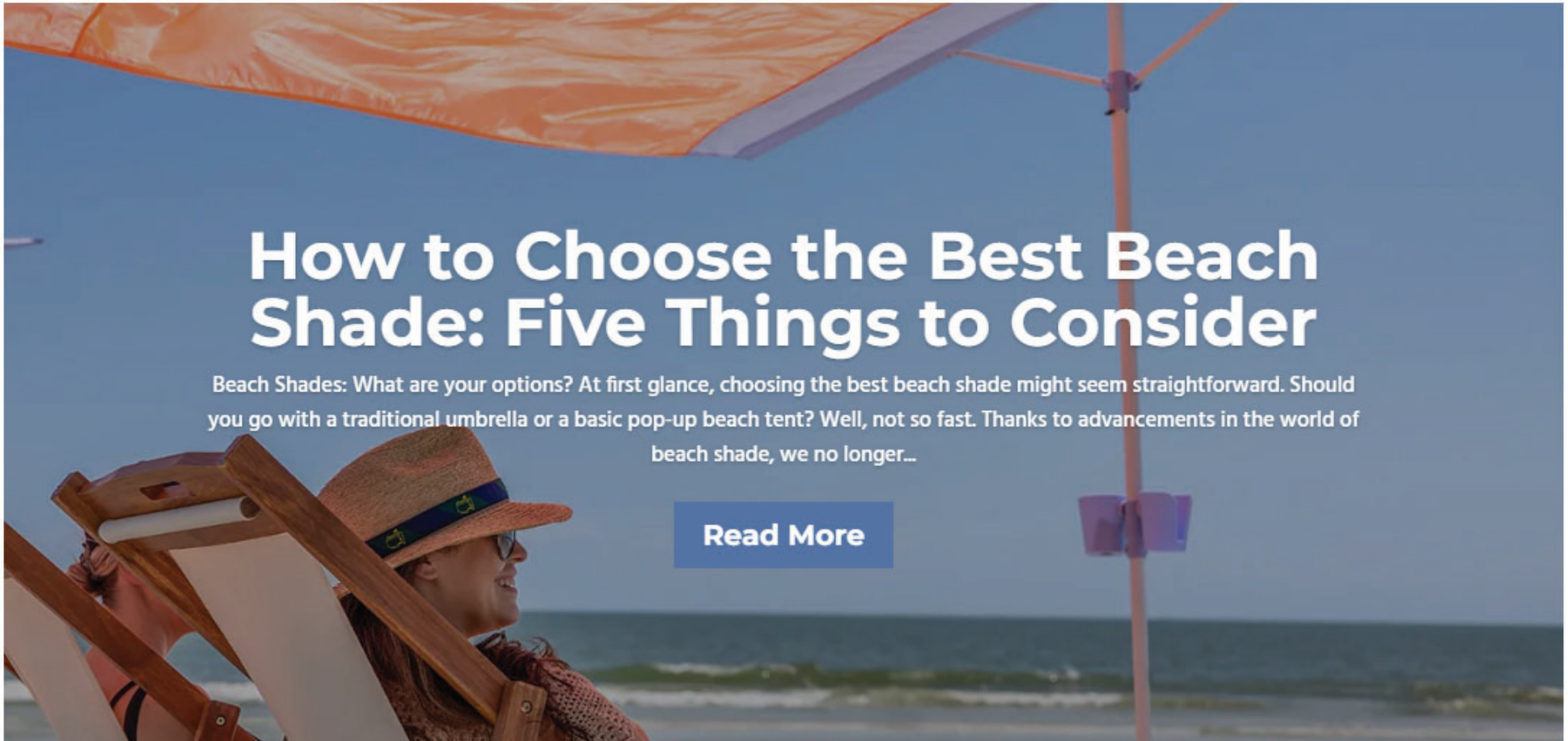
ShoreShade® is a revolutionary sunshade that is lightweight, easy to use, and packed with exciting features like integrated gear hooks and oversized cup holders. Plus, with no assembly required, your Sail sets up in less than 1 minute... and with every minute saved a memory can be made!

Exceptional Customer Service

When you decide to buy from us, you become more than just another customer...you become part of the ShoreShade family. Anytime you reach out to us via Helpin12@shoreshadesails.com, you can expect to hear from our Augusta, GA-based Team in 12-hours or less

Outstanding Warranty

We stand behind our product and proudly offer a 2-year, top-to-bottom warranty on every ShoreShade. You can rest easy knowing the ShoreShade will be the backbone of your family vacations for years to come! Click here for details.



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Exhibit E

U.S. PATENT NO. RE50606 - CLAIM 44	
Claim Language	*Shoreshade Product*
A sun shade assembly	 *Shoreshade Facebook Page*
a mast configured to extend upwardly from a supporting surface, and having a top end and a bottom end	 *Mast extending upwardly from the beach ("supporting surface")*

at least one rib located proximate the top end of said mast	Ribs located at the top end of the Mast 
[said rib] configured to rotate relative to the supporting surface	Rib rotates relative to the beach to allow sail to adjust to the direction of the wind  ***See attached Facebook reviews

a sail having a proximal edge secured to said rib and an unrestrained free edge adapted to unfurl in response to blowing of the wind	*Proximal edge of sail is secured to the rib while free edge of sail is unrestrained*  *Free edge of sail unfurls in the wind*
and wherein an entire surface area of said sail is unrestrained from the proximal edge to the free edge	*No restraining structure between proximal and free edges of the sail* 
when unfurled, said sail and rib are adapted to rotate together to a direction of the blowing wind	***See attached Facebook reviews *Sail and rib rotate to a direction of the wind*

Exhibit F

FIND A STORE REVIEWS

SOLBELLO



4.9 (720 reviews)

SOLBELLO

$150.00

COLOR

BLUE | CORAL | NAVY

SIZE

8

4 interest-free installments, or from **$13.54**/mo with shop Pay

Check your purchasing power

ADD TO CART

Won't Blow Down the Beach

Quick & Easy Single Person Set Up

No Wind? No Problem!™

Optional No-Wind Kit™ included for those rare days with no wind, or when the breeze is gentle and shifting, giving you peace of mind during every outing.

Unobstructed 360 Degree Views

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Exhibit G

amazon.com/stores/ShoreShade/page/A663AF6D-EDF2-47BF-B87D-84CD61EB1D15?lp_asin=B0D2JFYW2R&ref_=...

Work

New Chrome available

ShoreShade

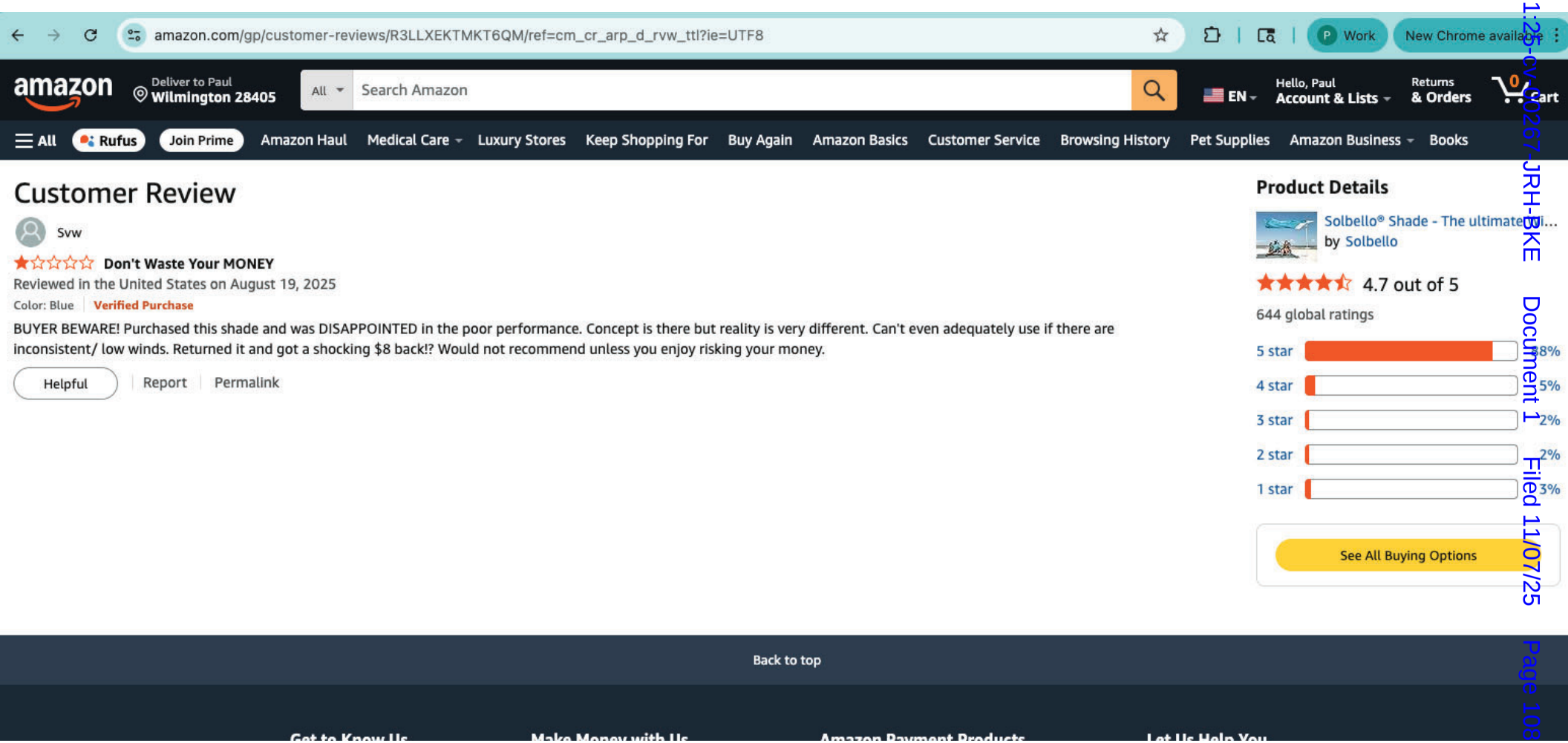
Follow

Search all ShoreShade



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Exhibit H



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Exhibit I

facebook.com/story.php?story_fbid=1488910768678022&id=100042666456847&comment_id=1290360679036051&comment_gqlid=Y29tbWVudDoxNDg4OTEwNzY4Njc4M...

ch Facebook



SOLBELLO.COM

Quick & Easy Single Person Setup

Simple to setup, Lightweight, UPF 50 Sun Protection and Unobstructed 36...

Shop now

See insights

Boost a post

135

47 comments 31 shares

Like Comment Share

Most relevant

Comment as Solbello Shade

Jo SanCartier

I saw one this weekend among the Shabumis, cabanas and tents and I wish I had taken a picture, but the guy finally just tore it down and up and I didn't see him again..it was bent every which way and contorted the wind pulverized it...I was not impressed.

11h See Response Unhide

Reply to Jo SanCartier

Glenn Downey

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Exhibit J

facebook.com/reel/813540988026395

Work

New Chrome available



THE SHADE EVERYONE'S TALKING ABOUT...

Solbello Shade

Solbello isn't just shade—it's the beach essential everyone's raving about. Quick to set up, easy to carry, and built for endless beach days. See why everyone's obsessed.

SOLBELLO

4

2

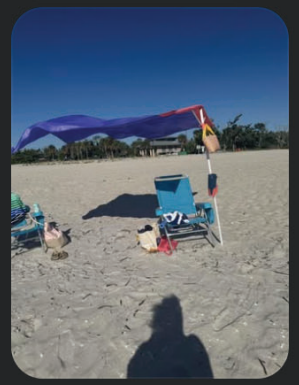
Solbello Shade

Solbello isn't just shade—it's the beach essential everyone's raving about. Quick to set up, easy to carry, and built for endless beach days. See why everyone's obsessed.

Boost reel

Hidden by This Page

Linda Aiello
Just set mine up.



1d Send message Unhide

Hidden by this Page is selected, so other comments have been filtered out except related replies that provide context. To reply to a comment you've unhidden, change your filter selection.

Comment as Solbello Shade

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Exhibit K

From: **Laura Bua** [redacted]
Subject: Re: New customer message on June 22, 2025 at 10:16 am
Date: June 22, 2025 at 10:49 AM
To: Paul James solbelloshade@gmail.com
Cc: [redacted]

LB

Hi Paul

It was a pleasure speaking with you today and I am so glad that I reached out rather than just submit an inaccurate review.

I am including my sister Renee in the reply so she also has your information.

Thanks again. As I mentioned earlier we love supporting local businesses and will absolutely promote your company especially for the fabulous customer service your provide.

Thanks,
Laura

Sent from Yahoo Mail for iPhone

On Sunday, June 22, 2025, 10:38 AM, Paul James <solbelloshade@gmail.com> wrote:

> Laura,
>
> Thank you for reaching out! We just spoke, and again, I'm sorry you were confused by the other brand you purchased, Shore Shade. For the trouble of dealing with their quality and returns, please follow the two links below:
>
> 1. For 30% off up to 2-Solbellos - https://solbello.com/discount/LAURABUA?redirect=%2Fproducts%2Fsolbello
>
> 2. For your free upgraded sails - https://solbello.com/discount/QUIETSAILUP?redirect=%2Fproducts%2Fparts-replacement-sail
>
> Please let me know if you have any questions or if there's anything else we can do.
>
> Thank you!
> 🤙☀️🙏
>
> Paul James
> 1-866-96-BEACH
> paul@solbello.com
> www.solbello.com
>
> Tag us! @SolbelloShade
> Shade For Days
>
> > On Jun 22, 2025, at 10:16 AM, Solbello (Shopify) <mailer@shopify.com> wrote:
> >
> > You received a new message from your online store's contact form.
> >
> > **Country Code:**
> > US
> >
> > **Name:**
> > Laura Bua
> >
> > **Email:**
> > [redacted]
> >
> > **Phone:**
> > [redacted]
> >
> > **Body:**
> > My sister and I recently purchased two shades from you and really struggled the first day out. 1) we assume we didn't dig deep enough into the sand because the pole would not stand up unless we put weight at the bottom. 2) and most concerning. Is that the telescoping pole would not lock into place after we put the clip in the closed position. Any pressure at all on the pole caused it to slide down. I am not talking about where you place the pin in at the top of the pole. That part functions fine. Is this a known issue? Thanks

Exhibit L

From: **Paul James** paul@solbello.com
Subject: Re: Let's Collaborate: Elevate Solbello with Unique UGC from Sunny Florida!
Date: June 2, 2024 at 9:27 PM
To: Ashley+Lund [redacted]
Cc: help help@solbello.com

Ashley,

Thank you for reaching out! Yes I'm interested in discussing what you might have in mind, this week anyway after Monday is good for me, let me know if there's a good time to hop on a call?

Also, your email goes back and forth and please note that we are not Shore Shade, I apologies on their behalf if there is any brand confusion. We are the original and legitimate wind driven umbrella and have multiple granted patents (Design and Utility), protection is in progress :).

👍☀️🙏

Paul James
1-866-96-BEACH
paul@solbello.com
www.solbello.com

Shade For Days

> On Jun 2, 2024, at 9:14 PM, Ashley+Lund <[redacted]> wrote:
>
> Hello!
>
> I hope this email finds you well. My name is Ashley, and I am the founder of Experiences Are Greater, a company dedicated to showcasing the best travel and facility experiences through compelling user-generated content (UGC). Given our expertise and passion, I believe a collaboration between Shore Shade and Experiences Are Greater would be a fantastic opportunity to elevate your brand's presence and engagement.
>
> As a Florida-based company, we are fortunate to live near some of the most beautiful beaches in the world, providing us with a perfect backdrop to create stunning content featuring Solbellos exceptional products. Our access to these pristine locations allows us to capture authentic, high-quality images and videos that highlight the practicality and aesthetic appeal of your beach shades in their natural environment.
>
> Here's why partnering with Experiences Are Greater would be beneficial for Solbello:
>
> 1. **Targeted Content Creation**: With our focus on travel and family niches, we understand what resonates with beachgoers and travel enthusiasts. Our content will not only showcase the functionality of Solbello products but also inspire your audience to envision their

perfect beach day.

2. **Authentic UGC**: We specialize in creating engaging and genuine UGC that builds trust and credibility. Our content will feature real-life scenarios, demonstrating how Solbello enhances the beach experience, making it more relatable and appealing to potential customers.

3. **Local Insights**: Living in Florida, we have a deep understanding of the local beach culture and trends. This insight allows us to create content that is not only visually appealing but also culturally relevant, ensuring it connects with your target market on a personal level.

We would love to discuss how we can tailor a UGC campaign that aligns with Solbello brand values and marketing goals. Let's set up a time to chat about how we can bring this collaboration to life and make Shore Shade the go-to choice for beach enthusiasts.

Thank you for considering this opportunity. I look forward to the possibility of working together and creating beautiful, impactful content for Solbello.

Best regards,

Ashley Lund
Founder, Experiences Are Greater
[redacted]
experiencesaregreater.com

P.S. I've included a portfolio of our recent work below that demonstrates the quality and style of content we produce. I hope it gives you a glimpse of the exciting potential of our collaboration!

https://experiencesaregreater.my.canva.site/ugcportfolio

Exhibit M



Solbello Shade
Published by Danny Gillis
· June 12 ·

Quick & Easy Single Person Setup

Our wind-driven® shade is not just another beach accessory; it's a game-changer.

395 112 617

View more video insights

Like Comment Share

Comments Hide

Hidden by This Page

Hope Crawford Fortier
This looks like the Shoreshade sail without the cup holders. The Shoreshade is less expensive.

3h See Response Unhide

Reply to Hope Crawford Fortier

Comment as Solbello Shade

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Exhibit N



Lisa Hall Rhyne

Assign this conversation

11:13 AM



Hello, I really wanted to buy your product, but it was cost prohibitive for me so I bought a Shore Shade instead. I'm really not happy with it and was wondering if you ever had a coupon where I could buy your product for a similar cost?

Thanks for reaching out! If you have any questions, please email info@solbello.com, or call 866-96-BEACH. Stay shady!
- The Solbello Team.

Reply in Messenger...

Exhibit O

Schwartz
LAW FIRM P.C.
Patent, Trademark & Copyright

November 17, 2023

ShoreShade LLC
Mr. Shawn Carnes
1023 Redbird Road
Augusta, GA 30904

via email only
shawn@shoreshadesails.com
info@shoreshadesails.com
getshade@shoreshadesails.com

Re: Solbello, Inc. / U.S. Patent Nos. D998,739 and 11,596,211

Dear Mr. Carnes:

This law firm represents Solbello, Inc. ("Solbello") in intellectual property matters including issues of patent infringement, trade dress infringement and unfair competition. Solbello is the owner of U.S. Patent Nos. D998,739 and 11,596,211 for self-adjusting sun shade products — the '739 and '211 Patents, respectively. Copies of these patents are attached for your reference. Other United States and international patents are currently pending.

It has recently come to our attention that you and your company ShoreShade LLC ("ShoreShade") are marketing a virtually identical product through the following website **www.shoreshadesails.com**. Photographs comparing the patented Solbello product and the ShoreShade product are copied and discussed below.

Solbello's '739 Patent is a *design patent* which covers and protects the "ornamental appearance" of the Solbello product. The determination of infringement of a design patent is made by comparing the accused product with the drawings in the patent. Comparison of the accused product to the drawings involves what is referred to as the "*ordinary observer*" test. Egyptian Goddess, Inc. v. Swisa, Inc., 543 F3d 665, 668 (Fed. Cir., 2008). The ordinary observer test requires a court to determine whether an ordinary observer, paying as much attention as a customer familiar with the prior art (the prior, similar patented designs), would reach the conclusion that the patented design and the accused infringing design are substantially the same. Id. at 661. If an ordinary observer would be induced to purchase the accused product instead of the patented product due to the observer's conclusion that the two products are substantially the same, the test is satisfied, and there is infringement. Id.

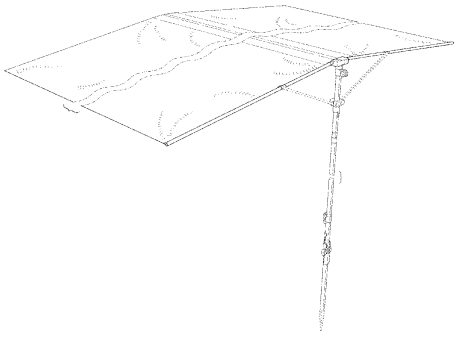
Under the ordinary observer test indicated above, it is clear that the ShoreShade design is substantially the same as the Solbello design and therefore infringes the '739 Patent. See comparison on following page. The recognizable and highly distinctive features of the Solbello product also constitute protectable trade dress under the federal Lanham Act.



ShoreShade Design



Patented Solbello Design



U.S. Patent No. D998,739

With this letter, you are given actual notice of Solbello's objection to your infringing activity, and we therefore consider any such continued activity to be knowing and willful in nature. As such, we demand that you and your company immediately cease and desist all further manufacture, marketing and sales of the infringing ShoreShade design.

While our hope is to resolve this matter amicably and informally, please know that Solbello has invested substantially in developing and protecting its intellectual property and intends to take all legal action necessary to enforce its rights in this patented product.

Please respond to the above by **December 1, 2023**.

Very truly yours,

SCHWARTZ LAW FIRM, P.C.

JSCHWARTZ

Jeffrey J. Schwartz

SouthPark Towers, 6100 Fairview Road, Suite 1135, Charlotte, NC 28210

ph: 704.552.1889/fax: 704.552.1866/e-mail: jjs@schwartz-iplaw.com

Exhibit P

NELSON MULLINS

NELSON MULLINS RILEY & SCARBOROUGH LLP
ATTORNEYS AND COUNSELORS AT LAW

Craig N. Killen
Registered Patent Attorney | Admitted in SC and NC
T: 704.417.3127 F: 803.255.9103
craig.killen@nelsonmullins.com

301 South College Street / 23rd Floor
Charlotte, NC 28202-6041
T: 704.417.3000 F: 704.377.4814
nelsonmullins.com

December 18, 2023

Via Electronic Mail

Jeffrey J. Schwartz, Esq.
Schwartz Law Firm, P.C.
SouthPark Towers
6100 Fairview Road, Suite 1135
Charlotte, NC 28210

Re: Solbello, Inc. and ShoreShade LLC

Dear Mr. Schwartz:

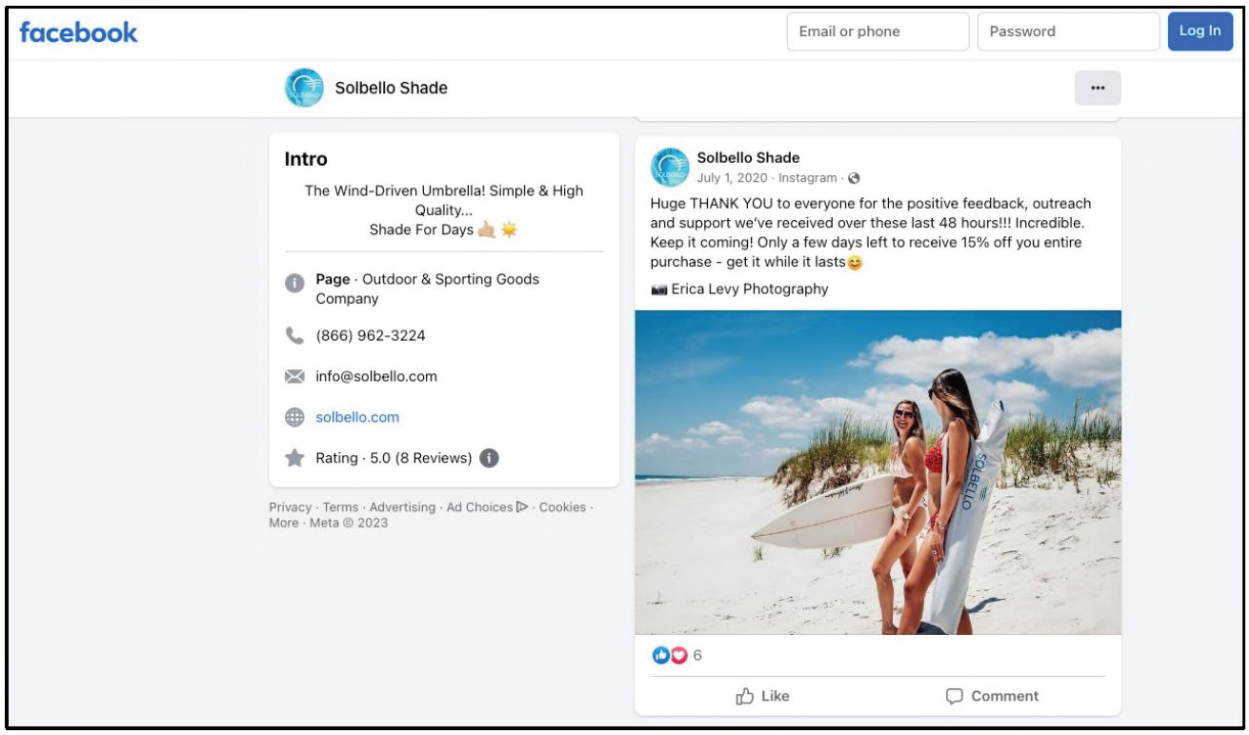
We have now had an opportunity to review in detail the allegations in your letter of November 17, 2023. Initially, it should be noted that ShoreShade LLC respects the valid intellectual property rights of others. In this case, however, we have concluded that Solbello's claim of infringement lacks merit.

Your letter does not specifically allege infringement of the '211 utility patent. Should you contend that the '211 patent is infringed, please provide a claim chart comparing claims of the '211 patent on an element-by-element basis against the ShoreShade product. Otherwise, we will assume that Solbello does not contend this patent is infringed.

Likewise, while your letter contends that "[t]he recognizable and highly distinctive features of the Solbello product" are protectable trade dress, there is no discussion of what those alleged features are, or of the legal elements that a plaintiff would need to prove in order to bring such a claim. We therefore assume that Solbello does not contend that trade dress infringement has occurred.

Regarding the '739 design patent, that patent was filed on July 13, 2021. As you are aware, if the design shown in the patent was "described in a printed publication, or in public use, on sale, or otherwise available to the public" by the applicant before the "critical date" of July 13, 2020, the patent is invalid. Available evidence shows that the Solbello product embodying the design of the '739 patent was in public use, on sale, or

otherwise available to the public prior to the critical date. As but one example, a Facebook post dated July 1, 2020 offers “15% off your entire purchase” --



Because the ‘739 patent is invalid, it cannot be infringed.

Further to the above, your client is on notice to put in place a ***litigation hold*** and take all steps necessary to preserve and retain all documents, records, recordings, and electronically stored information (“ESI”) which refer or relate to or evidence any of the matters discussed in this letter. This includes but is not limited to all documents, records, and ESI relating to conception, reduction to practice, development, importation, testing, marketing, advertising, offers for sale, and sales of the Solbello product, as well as any websites that you control (including but not limited to https://solbello.com/) and all social media posts.

Even assuming solely for the sake of argument that the ‘739 patent is not invalid, it would not cover ShoreShade’s product. While a court evaluating the question would employ the “ordinary observer” test, that test must be conducted using the “correct context.” *Lanard Toys, Ltd. v. Dolgencorp LLC*, 958 F.3d 1337, 1344 (Fed. Cir. 2020). In other words, “while the ‘ordinary observer’ test is not an element-by-element comparison, it also does not ignore the reality that designs can, and often do, have both functional and ornamental aspects.” *Id*. at 1343. Functional features “are not themselves entitled to [design] patent protection” and “‘may not serve as a valid basis for comparison in a design patent infringement analysis.’” *Id*. at 1344-1345.

Particularly when viewed in the correct context, there are numerous differences between the ShoreShade product and the design of the ‘739 patent. An ordinary observer would not find them to be “substantially the same.”

Please feel free to contact me if you would like to discuss.

Very truly yours,



Craig N. Killen

CNK/ig