

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

BOTE, LLC,
Petitioner

v.

Twitch LLC,
Patent Owner.

IPR2024-00892
U.S. Patent No. 9,862,466

**DECLARATION IN SUPPORT OF
PETITION FOR *INTER PARTES* REVIEW
OF T. KIM PARNELL, PH.D., PE
UNDER 37 C.F.R. § 42.101**

TABLE OF CONTENTS

	Page
I. INTRODUCTION	1
A. PURPOSE OF OPINION.....	1
II. TECHNICAL BACKGROUND OF T. KIM PARNELL, Ph.D., PE	3
III. THE PRIORITY DATE OF THE '466 Patent AND THE STATE-OF- THE-ART AT THAT TIME	12
IV. THE '466 PATENT.....	17
V. THE '466 PATENT PROSECUTION HISTORY	21
VI. THE LEVEL OF ORDINARY SKILL IN THE ART FOR THE '466 PATENT	31
VII. CLAIM INTERPRETATION	36
A. The Principles of Patent Claim Interpretation (Also Known as Claim Construction)	36
B. Interpreting Certain Claim Limitations from the '466 Patent.....	37
1. stand-up board should be construed as “ <i>a generally elongated board (like a surfboard) that a user can stand upon and paddle over the water</i> ”	37
2. “rail” should be construed as “ <i>structure extending along at least a portion of the peripheral sides of the paddleboard</i> ”	41
3. “tent covering” should be construed as “ <i>a sheet of material covering one or more objects to provide a shape over or between such objects.</i> ”	43
4. “over-hangs” should mean “ <i>project or extend beyond</i> ”	45
5. under-hangs should mean “ <i>protruding from beneath</i> ”	46
6. Remaining Claim Terms	47

VIII. THE PRIOR ART	47
A. Hoffmann (Ex. 1006; Translation, Ex. 1007)	47
B. Hoge (Ex. 1009)	50
C. Swan (Ex. 1010)	51
D. Scadden (Ex. 1011)	52
E. Airhead SS (Ex. 1021)	53
F. Hobie iSeries (Ex. 1022)	54
IX. THE PRINCIPLES AND LAW OF PATENT INVALIDITY	55
X. COMPARING THE '466 PATENT CLAIMS WITH THE PRIOR ART	59
A. “An inflatable paddle board, comprising:” (Claim 1, preamble); “An inflatable paddle board, comprising:” (Claim 15, preamble); “An inflatable paddle board, comprising:” (Claim 19, preamble); “An inflatable paddle board, comprising:” (Claim 20, preamble); “A method of constructing an inflatable paddle board, comprising:” (Claim 18, preamble).....	59
B. “a first inflatable chamber forming a stand-up board” (Claim 1.a); “a lower inflatable chamber forming a stand-up board” (Claim 15.a); “forming a stand-up board area from a lower inflatable chamber” (Claim 18.a); “a first inflatable chamber forming a stand-up board.” (Claim 19.a); “a first inflatable chamber forming a stand-up board.” (Claim 20.a).	60
C. “a second inflatable chamber connected to the first inflatable chamber to form a curve-shaped front hull.” (Claim 1.b); “an upper inflatable chamber connected to the lower inflatable chamber, the upper inflatable chamber forming a rail around at least a portion of the lower inflatable chamber, and the combination of the lower and upper inflatable chambers forming a curve-shaped front hull” (Claim 15.b); “connecting an upper inflatable chamber to the lower inflatable chamber to form a rail around at least a portion of the lower inflatable chamber. (Claim 18.b); “a second inflatable chamber connected	

	to the first inflatable chamber to form a curved-shaped front hull (Claim 19.b); “a second inflatable chamber connected to the first inflatable chamber to form a curve-shaped front hull. (Claim 20.b); “wherein the second inflatable chamber has sidewalls to form a rail around at least a portion of the first inflatable chamber. (Claim 10).....	70
D.	“a tent covering between the lower inflatable chamber and the upper inflatable chamber.” (Claim 15.c); “providing a tent covering between the first inflatable chamber and the second inflatable chamber to form a curve-shaped front hull.” (Claim 18.c); “a tent covering between the first inflatable chamber and the second inflatable chamber.” (Claim 20.c); “a tent covering between the first inflatable chamber and the second inflatable chamber.” (Claim 13).....	81
E.	“wherein the tent forms a separate inflatable air chamber” (Claim 14); “wherein the tent forms a separate inflatable air chamber” (Claim 16).....	88
F.	“wherein the rail is formed around a front and front-side portion of the lower inflatable chamber.” (Claim 17).	89
G.	“wherein the first inflatable chamber at least partially overhangs the second inflatable chamber” (Claim 1.c); “wherein the first inflatable chamber overhangs a front portion of the second inflatable chamber” (Claim 4); “wherein the first inflatable chamber overhangs a rear portion of the second inflatable chamber” (Claim 5); “wherein the first inflatable chamber overhangs both a front and a rear portion of the second inflatable chamber” (Claim 6).....	91
H.	“the first and second inflatable chambers are interconnected with only one fill valve” (Claim 1.d).	94
I.	“wherein the second inflatable chamber at least partially overhangs the first inflatable chamber” (Claim 2); “wherein the second inflatable chamber overhangs a front portion of the first inflatable chamber (Claim 3); “wherein the second inflatable chamber overhangs the first inflatable chamber by at least 5% of the length of the first inflatable chamber (Claim 7).	96

J.	“wherein the first inflatable chamber is wider than the second inflatable chamber” (Claim 9).....	100
K.	“wherein the rail slopes inward towards a center of the first inflatable chamber” (Claim 11).....	101
L.	“wherein at least one of the first inflatable chamber and the second inflatable chamber are drop-stitch chambers.” (Claim 12).....	103
M.	“wherein the second inflatable chamber under-hangs the first inflatable chamber for at least 5% of the length of the first inflatable chamber” (Claim 8).....	104
XI.	Motivation to Combine and Expectations of Success	107
A.	Motivation to Combine	107
B.	Reasonable Expectations of Success & Predictability	112
XII.	DECLARATION	113

** All Emphasis Added Unless Otherwise Noted **

I. INTRODUCTION

A. PURPOSE OF OPINION

1. I have been retained by the Petitioner, BOTE, LLC, (hereinafter “BOTE” or “Petitioner”) to provide my technical opinions and analysis concerning the validity of U.S. Patent No. 9,862,466 (the ‘466 Patent) considering a combination of prior art provided to me (unless otherwise noted herein) by the Petitioner. I am not an attorney and I am not providing any legal opinions. My opinions and analysis herein are based on my Expert engineering and technical expertise and experience. I will attempt to refrain from providing any legal opinions or conclusions. To the extent that any of my opinions or analyses provided herein are considered legal in nature, such opinions or analyses are based upon legal standards as explained to me by BOTE’s counsel (and summarized herein).

2. I am being compensated at my standard rate of \$650 per hour. I have no financial stake contingent upon the outcome of this IPR proceeding or on any related activities or matters. I have not performed any prior consulting for BOTE or any other party involved in this matter.

3. In forming my opinions as expressed in this declaration, I have relied on my own knowledge, experience, and expertise, as well as the knowledge of a POSITA (defined below) in the relevant timeframe. In addition, I have reviewed and relied upon the Table of Exhibits below, and any other cited references. For this

declaration and my opinions, I reserve the opportunity to review any additional material that may be produced by other parties. I also reserve the opportunity to continue my investigation which may include a review of additional documents and new information that may be produced, and also testimony from depositions associated with this case.

Exhibit No.	Description¹
1001	U.S. Patent No. 9,862,466.
1002	Prosecution History for U.S. Patent No. 9,862,466.
1003	Prosecution History for U.S. Patent No. 10,479,458.
1005	Curriculum Vitae (CV) of T. Kim Parnell, Ph.D.,PE.
1006	DE2612881 to Hoffmann, et al.
1007	English Translation of DE2612881.
1008	Translation Certification of Dr. W.A.H.M Van Borm.
1009	U.S. Publication No. 2016-0096591 to Hoge, JR.
1010	U.S. Publication No. 2014-0245943 to Swan.
1011	U.S. Patent No. 8,438,985 to Scadden.
1012	U.S. Publication No. 2013-0137319 to Haller et al.
1013	The American Heritage College Dictionary (3rd ed. 2000) (definitions of “overhang,” “tent,” and “underhung”).

¹ Descriptions are for convenience only and are not admissions or evidence.

Exhibit No.	Description ¹
1014	Rob Casey, Stand Up Paddling Flatwater to Surf and Rivers (Colin Chisholm, 1st ed. 2011).
1015	Mitch Powers, Stand Up Paddle Instruction Book: All the Basics Including Flatwater, Fitness and Surf Paddling, Introduction–102 (Createspace Independent Pub., 2013).
1016	Complaint, <i>Twitch LLC d/b/a Hala Gear v. Bote, LLC</i> , No. 6:24-cv-00233 (W.D. Tex. May 3, 2024), ECF No. 1.
1017	NPL – Sea Eagle 473rl RazorLite Inflatable Kayak Drop Stitch Inflatable Kayak.
1018	U.S. Patent No. 9,114,862 to Dingel.
1019	U.S. Patent No. 6,394,018 to Klimenko.
1020	U.S. Patent No. 6,648,707 to Peterson.
1021	ISUPWORLD.com, “Airhead SS Camouflage ISUP Review” archived at Wayback Machine (https://web.archive.org/) > https://isupworld.com/airhead-ss-camouflage-review/ , captured May 19, 2015.
1022	Hobie.com, “10’9 SPORTSMAN Inflatable Series Stand Up Paddleboard,” archived at Wayback Machine (https://web.archive.org/) > http://www.hobie.com/stand-up-paddleboards/109Sportsman-31-5.aspx , captured June 18, 2015.
1023	Internet Archive Declaration of Nathaniel E Frank-White.

II. TECHNICAL BACKGROUND OF T. KIM PARNELL, Ph.D., PE

4. I have been retained by the law firm of Baker & Hostetler LLP (“BakerLaw”) to provide my technical review, analysis, insights, and opinions concerning the infringement of certain claims of U.S. Patent No. 9,862,466

(Ex. 1001, the “’466 Patent”) entitled “Inflatable Paddle Board”. I have been informed that the ’466 Patent is assigned to Twitch LLC. (“Twitch”).

5. I am a trained Professional Mechanical Engineer (P.E.) licensed in the State of California. I hold three academic degrees: a B.E.S. in Engineering Science (with Highest Honors) from the Georgia Institute of Technology in 1978, followed by a M.S. and a Ph.D. in Mechanical Engineering from Stanford University in 1979 and 1984, respectively.

6. I am an ASME Fellow and an IEEE Life Senior Member. ASME is the American Society of Mechanical Engineers and IEEE is the Institute of Electrical & Electronics Engineers. These are the primary professional organizations for Mechanical and Electrical Engineering respectively. I am a Board Member of IEEE-CNSV (Consultants’ Network of Silicon Valley). I am also a member of IEEE-CT (Consumer Technology), IEEE-VTS (Vehicular Technology Society), and IEEE-EPS (Electronics Packaging Society), which focuses specifically on the electronics industry and electronic components, manufacturing, and testing.

7. I have served as an elected officer for several of these groups including as Chair of the IEEE-SCV (Santa Clara Valley) Section (the largest IEEE Section in the world with over 10,000 members in Silicon Valley, CA), Chair of IEEE-CNSV (Consultants’ Network of Silicon Valley), and Vice Chair/Treasurer of IEEE-VTS (Vehicular Technology Society). I am also a long-time Member of ASM

International (Materials Information Society) and SAE (Society of Automotive Engineers) International. I joined SAMPE (Society for the Advancement of Materials and Process Engineering) to further expand my experience in the areas of cellular materials and composite materials. I served as Vice-Chair for the NAFEMS-CWG (Composites Working Group) which directly focuses on analysis and simulation of components designed and manufactured to take advantage of the unique material properties that are possible with composites.

8. I currently work as a private consultant through Parnell Expert Consulting. I consult for high-tech industry and legal firms regarding patents, product liability, failure analysis, reliability, and product design/development issues. I have over 30 years of professional experience using and combining analysis, simulation, and laboratory inspection/measurement to understand and solve engineering problems in a variety of industries and applications. Many of my projects involve products with both electrical and mechanical components and require a multidisciplinary approach and expertise.

9. I began my professional career at Bell Laboratories in Indianapolis, IN, in 1978 as a Member of Technical Staff (MTS). My group focused on design and development of telephone electro-mechanical components including keypads and keyboards. These products were used throughout the Bell System in all residential and business applications. The products were manufactured in very high volumes

and were designed and tested with the goal of 20-year product life. I worked at Bell Labs before and during my Stanford M.S.M.E. degree. Bell Labs supported me for the M.S.M.E. degree and I returned to continue my career at Bell Labs in 1979. I took a leave of absence from Bell Labs and returned to Stanford in 1980 to pursue a Ph.D. in Mechanical Engineering. I completed my Stanford University Mechanical Engineering Ph.D. degree in 1984. My Ph.D. thesis focused on numerical simulation (computer models) for nonlinear analysis of shell structures. My thesis was motivated by issues that I studied while at Bell Labs. The techniques that I developed for nonlinear analysis of shells included snap-through buckling which was a technology being incorporated into newer, more reliable keypads in the early 1980s.

10. After graduating from Stanford University, I then joined SST Systems, Inc., a Silicon Valley start-up company, as a Principal Engineer and worked there from 1984-1986. In 1986, I joined Failure Analysis Associates, Inc. as a Senior Engineer in the Mechanics and Materials Department. I was promoted to Managing Engineer in 1990. I worked on a wide range of projects as a consultant including aspects such as cyclic fatigue, product failures, product design, and medical device development. The company went public in 1990 as "The Failure Group," but then changed its name to Exponent in the mid-1990s. In 1998 I was promoted to Senior Managing Engineer at Exponent. After leaving Exponent, I then joined Rubicor Medical, Inc. in 1999 as Director of Research & Development. When I left Rubicor

in 2000, I started independent engineering consulting under Parnell Engineering & Consulting. In 2024, I formed a corporation named Parnell Expert Consulting to further focus my consulting practice on litigation. I have been an independent consultant from 2000 to the present. During that time, I also worked for MSC Software as a Senior Manager (2006-2010) in software Product Management.

11. I was a full-time member of the Mechanical Engineering faculty at Santa Clara University from 2010-2012 and taught classes in Manufacturing, Material Science, Mechanical Design, Finite Element Analysis (FEA), Composite Materials, and Mechanisms. During this time, I served as the Faculty Advisor for several Senior Design Projects. These “real world” Capstone Design Projects encompassed design, system integration, and manufacturing aspects and provided the students with a full product development experience. I also taught graduate courses in Mechanical Engineering at Stanford University from 1995-1996.

12. My project work includes studies for a broad range of consumer products, recreational equipment, industrial equipment, and manufacturing methods. I have deep experience in composite materials, elastomeric materials, and associated manufacturing methods. My practice encompasses design, failure analysis, and reliability issues. I often serve as an expert witness for litigation, and my expert work often involves intellectual property matters.

13. I have consulted and performed inspections on various types of consumer electronic equipment and mobile computing devices (laptop computers, cell phones, keyboards, displays, portable entertainment devices, etc.) during my career. This work has included projects for ruggedized electronic equipment, such as waterproof laptop and keyboard technology. I have done additional work on mobile cellular devices that included failure analyses related to mechanical damage, as well as analyzing drop and impact damage to make devices more robust, CPU failure, battery failure, and heat/thermal issues. I have also studied ruggedization of laptop computers and similar electronic instrumentation to withstand severe service conditions in the field. This experience further includes analyses of materials and material behavior, including elasticity, flexibility, and impact, as well as expansive experience with polymeric materials and manufacturing methods.

14. I have consulted on Inflatable Structures and Pressure Vessels throughout my entire professional career. My Stanford University Ph.D. Thesis research and course work extensively focused on Shell Mechanics and applications to Pressure Vessels in the 1980 to 1984 timeframe. My work at Bell Labs in the 1978 to 1980 time frame involved several different shell and plate (flat) structures. I analyzed and designed elastomeric shell structures for use in telephone keypads and other similar keyboard structures. Keys and keyboards that use similar components are still widely used today in a variety of consumer electronic devices. I also

analyzed, designed, and worked with high volume manufacture and testing of shallow, spherical cap structures that were also used in telephone keypads. These shell structures were unique in that by applying an external pressure load (*e.g.*, a finger) will result in an audible “click” as the shell moves downward and undergoes “snap-through buckling” behavior. This highly nonlinear “snap-through buckling” response was one topic of my Ph.D. research at Stanford University.

15. My work on a wide variety of shell structures and shell applications started in 1978 and has continued to the present as a frequent component of my consulting project work. Additional details and examples are provided in the following paragraphs.

16. I have analyzed for design, design review, and investigated numerous failures of Pressure Vessels, Storage Tanks, and Shallow Spherical Cap structures to name just a few. Pipes are examples of another cylindrical shell structure that we all see throughout our everyday experience. Shell structures appear frequently, and we see them around us all the time for applications such as water storage tanks, fuel storage tanks, underground tanks, pipes, even in such common structures as a soft drink or beer can!

17. A soft drink can is a thin-walled cylindrical shell with shallow spherical end cap closures. These are thin-walled pressure vessels that must support internal pressure without leaking and be easy to open when required. Pressure vessels

typically have internal pressure, but sometimes also must withstand outside, external loads from handling, being loaded on a vehicle for transport, crush, impact, drop, underground burial, etc.

18. The applications of shell structures are common and appear frequently to all of us. The curvature of a shell structure (e.g., a cylindrical structure) allows it to be thin and carry the pressure primarily through membrane stress response. In addition to the membrane stresses in the shell structure, bending stresses are often dominant in regions where different shell geometries are joined together or where discontinuities occur or where external loads or attachments are applied. This is all part of the process employed by a designer of a particular structure.

19. I have been called many times to investigate failures of shell structures, some of which were catastrophic and led to serious injury or loss of life. Think of a soda can that is filled with liquid, but also has some carbon dioxide gas that results in the internal pressure and the bubbles when the soda is poured. If you drop a soda can, you may experience an abrupt (and messy) failure of the thin shell structure when the wall is breached and the combined gas and liquid begins to violently escape from the can! Other applications of shell structures may include pressure from liquid contents (such as your garden hose with liquid water pressurized from a pump or municipal water supply) or a natural gas (methane) distribution pipeline that is filled with gas (often with internal pressures far in excess of 200 psig). Natural gas

distribution pipelines are frequently in the range of 16 inch Diameter (OD) up to 42 inch Diameter (OD). Some examples may be found with either larger or smaller diameter pipelines. With internal high-pressure gas, a natural gas pipeline is basically a “bomb” and it reacts violently if the wall is punctured/breached or if the pipe wall fractures due to failure of the pipe material. I have inspected and analyzed numerous failures of gas filled pressure vessels. Many of these failures result in severe injury from the rapid depressurization and release of the internal gas even if the gas is air as opposed to methane. Many times, a secondary fire or explosion occurs if the gas that is released is flammable (e.g., methane). It is important to realize that failure of a gas-filled pressure vessel is very dangerous and releases a very large amount of energy in a fraction of a second. Failure of a liquid filled pressure vessel may only result in the liquid contents spilling out, but not with extensive energy released. This is why “hydro-testing” is often used to prove the pressure limit of a pressure vessel. Hydro-testing means pressurizing the vessel internally with water or liquid as opposed to a gas. Water is incompressible as opposed to a gas which is compressible.

20. My experience and body of work includes structures and pressure vessels made from elastomeric fabric materials, composite materials, in addition to a whole range of metals and metal alloys. Some of my projects included structures that were inflated with air. Internal pressure serves to stiffen a shell structure so that

it can then handle external loads. The design of shell structures involves determination of the necessary geometry, understanding the loads that will be applied, and determining the best material to use for the application. Stress levels from internal pressure and external loads must be analyzed to ensure that the material selected is capable of withstanding the resulting stress. I have performed these evaluations many times for a wide variety of applications.

21. I also have direct experience with manufacturing in multiple industries during my consulting career. These applications include consumer electronics, biomedical, medical device, automotive, petrochemical, paper, metal forming, metalworking, specialty materials, layered composite materials, and others. Equipment at issue for manufacturing often involves injection molding, metal forming and machining, semiconductor packaging, pipelines and piping components, pressure vessels, sensors, and control systems.

22. A more comprehensive record of my professional background and technical qualifications is reflected in my *curriculum vitae*, which is attached hereto as Ex. 1005. A complete listing of my expert engagements is included in my *curriculum vitae*.

III. THE PRIORITY DATE OF THE '466 Patent AND THE STATE-OF-THE-ART AT THAT TIME

23. I have been informed that the “priority date” for the '466 Patent is August 7, 2015. The '466 Patent specification and claims are described in greater

detail in Section IV. The '466 Patent is entitled “Inflatable Paddle Board” and is directed towards compact recreational watercraft (a Paddle Board).

24. Some history of how the sport evolved from ancient times to the modern-day incarnation is important. The paragraphs that follow provide an overview of the history and evolution of paddle boards.

25. Surfboards and Paddle Boards have been in use for now hundreds and even some indication of thousands of years². For three thousand years, Peruvian fishermen, used woven reed craft “*caballitos de totora*” to paddle out and surf back in to shore. African warriors stood on dugout canoes called “pirogues” using spears as paddles to approach enemy positions in stealth mode. In 1886, Peter Henry Emerson photographed a man stand-up paddling through marshes of East Anglia and captioned his photo as “Quanting the Marsh Hay”. Gondoliers of Venice actually used a paddle and not a pole to propel the gondolas through the narrow canals. In the late 1930s, two Brazilian surfers rode a stand up board called a *tabua havaiana* (Hawaiian plank) shaped by Julio Putz.

² (Ex. 1014 at 17-21.)



Quanting the Marsh Hay
(Photo by P.H. Emerson)

Peter Henry (P.H.) Emerson Photo taken in East Anglia, 1886.
(Ex. 1014 at 10.)

26. The use of watercraft was observed by Captain James Cook in 1778 when his ships sailed into the Hawaiian islands. The Hawaiian islanders used surfboards and paddle boards as “tools” for fishing and for moving around and about the islands. (Ex. 1014 at 9.)

27. Recreational use did not appear to be a part of the daily use of these “tools” for the natives. The idea of using a structure that resembles a surfboard but with the size and stability to allow the user to stand up on the surfboard and move it through the water with a paddle developed in Hawaii in an evolutionary fashion.

28. A user who stood up on his surfboard realized quickly that movement and balance were essential to remaining upright on the board. These users evolved and adapted their surfboards to make them more stable and therefore easier to stand up on and remain erect. Of course, now that the islanders were standing on their

modified, more stable boards, they wanted to have ways to move their board from Point A to Point B while on board.

29. Several options and means of improvement were obvious to the experienced user and fisherman. The procedure for improvement of the technology for early native fishermen was iterative, gradual, and involved experimentation, and trial and error. They were not engineering designers but rather highly experienced users. In shallow inland waters like streams, a very simple pole could be used to press against the soil/rock bottom under the water. The user could move the board over and through shallow water by “poling” along, repeatedly lifting and pressing the pole against the ground beneath the water to push the board through the water.

30. As the users moved from shallow water to deeper water or even out into the ocean waters near the shore, “poling” was no longer a viable means of propulsion. Next, ideas evolved to use another means of propulsion that could be used in deeper waters and even in rougher coastal waters. In these areas, where waves are coming in and there is a “surf” to contend with as the user wants to move about, a paddle was an obvious way that could be used to move the board (now considered a Paddle Board) from place to place.

31. In the 1940s, in Waikiki Beach, Hawaii, legendary surfers Duke Kahanamoku and instructor Leroy AhChoy sometimes used paddles to stand on their boards. Occasionally they used the paddles to steer while surfing. Bobby AhChoy

was the brother of Leroy and was badly injured in a car crash. He would paddle into the surf. The brothers also introduced the “sport” and technique to their father and to John Zapotocky. Zapotocky is often called the father of modern stand up paddle surfing. (Ex. 1014 at 10.)

32. It took modern pioneers Fletcher Burton and Dave Kalama to combine the evolution from history with modern technology and style. This evolution started in the 1990s. In 1995, Dave Kalama, who was a big wave surfer, initially tried using a short paddle with his board. Later Dave Kalama and friend Laird Hamilton tried longer paddles and began to see the benefits of stand up paddling which was natural with the longer paddle. Ultimately, the modern version of Beach Boy paddling remained a largely Hawaiian phenomenon. (Ex. 1014 at 10-11.)

33. A Vietnam veteran Rick Thomas brought a paddle board back to California in 2000. Standup paddling caught on quickly back in the continental United States. Stand up paddling has led to a true metamorphosis in the industry. Stand up paddling had instant appeal because you did not have a requirement for the “surf”. You could go just about anywhere with your paddle board, including shallow water and rapid streams. (Ex. 1014 at 11.)

34. Landlocked people started using Standup Paddle Boards (SUPs) instead of canoes or kayaks. By 2009, stand up paddle boarding was officially the fastest growing paddle sport in all of North America. On October 3, 2008 the US Coast

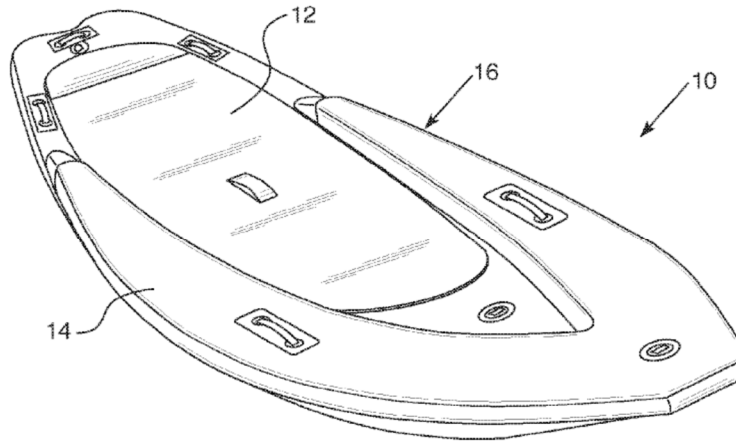
Guard even classified SUPs as vessels, similar to canoes or kayaks. The Coast Guard designation means that SUP riders are required to wear a personal flotation device (PFD) for safety when paddling in certain areas outside of the surf zone. (Ex. 1014 at 10.)

IV. THE '466 PATENT

35. The '466 Patent is titled “Inflatable Paddle Board,” and issued from Application No. 15/230,435, filed on August 7, 2016 (“the '435 Application”). (Ex. 1001 at Cover.) The '435 Application claims priority to Provisional Application No. 62/202,549, filed August 7, 2015.

36. The '466 Patent describes “an inflatable paddle board [that] includes a lower inflatable chamber forming a stand-up board, and an upper inflatable chamber connected to the lower inflatable chamber, the upper inflatable chamber forming a rail around at least a portion of the lower inflatable chamber, and the combination of the lower and upper inflatable chambers forming a curve-shaped front hull. The rail is formed around a front and front-side portion of the lower inflatable chamber. The inflatable paddle board may also include a tent covering between the first inflatable chamber and the second inflatable chamber.” (Ex. 1001 at 1:56-1:66.)

37. The '466 Patent discloses an “inflatable paddle board 10 [that] includes a board chamber 12 to form a stand-up board area, and a rail chamber 14 to form a rail at least partially around the stand-up board area.” (*Id.* at 2:32-35.)

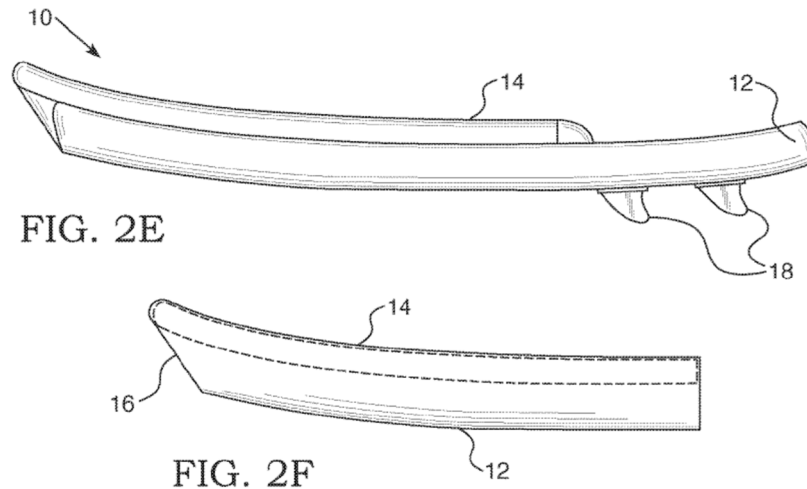


(Ex. 1001 at Cover.)

38. The '466 Patent further describes an embodiment as follows: “the lower chamber 12 is the shape and outline of a stand-up board. Hence, it may be referred to as the board chamber 12. The upper chamber 14 is generally U-shaped, and may have a flat or substantially flattened nose. The upper chamber 14 may be referred to as the rail chamber 14. The rail chamber 14 may be connected to the board chamber 12 (e.g., via glue, sewing, or otherwise).” (*Id.* at 2:56-62.)

39. Additionally, the '466 Patent discloses that embodiments may include a “tent material” that “may overlap between the lower chamber 12 and the upper chamber 14. The tent 16 may be made of PVC or other suitable material. The tent 16 may be connected (e.g., glued, sewed, or otherwise attached) to each chamber 12 and 14 and extend therebetween to cover the overlap between the chambers 12 and 14. The tent 16 forms a shape that is unique to this board, referred to herein as a “hull” shape, as it mimics the hull of a boat or ship. The tent 16 also forms a rail

shape that gives the board more stability. The shape also enables the rails of the board to slope outward and away from the center of the board chamber 12.” (*Id.* at 3:18-29.)



(Ex. 1001 at FIGS. 2E, 2F.)

40. The '466 Patent discloses that the “shape of the inflatable paddle board 10 provides a hull structure (e.g., at the front or bow and/or front-side of the board), thus providing extra buoyancy to help the user to navigate the inflatable paddle board 10, and also provides secondary (e.g., side-to-side) stability (e.g., for navigating whitewater).” (*Id.* at 4:19-24.)

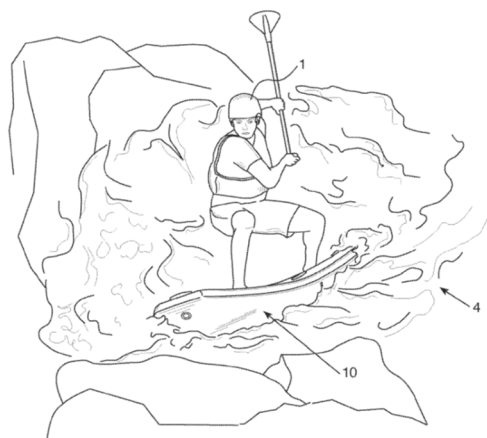


FIG. 6

(Ex. 1001 at FIG. 6.)

41. The '466 Patent also discloses an alternative embodiment that may “include a lower inflatable chamber 22. This lower chamber 22 may be raised at the front, back, and/or side(s), and may also include one or more fins 28. The inflatable paddle board 20 may also include an upper inflatable chamber 24. This upper chamber 24 may be connected to the lower chamber 22. A tent 26 may cover the area between the upper and lower chamber 22 and 24.” (*Id.* at 4:36-43.)

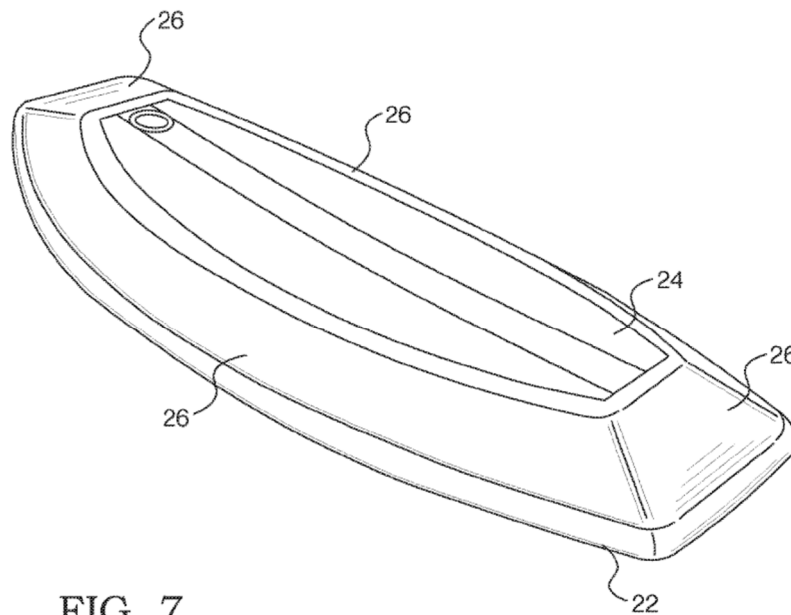


FIG. 7

(Ex. 1001 at FIG. 7.)

42. The '466 Patent has 20 claims. Claims 1, 15, 18, 19 and 20 are independent.

V. THE '466 PATENT PROSECUTION HISTORY

43. U.S. Application Ser. No. 15/230,435 ("the '435 Application") was filed on August 7, 2016 and claimed priority to U.S. Provisional Application Ser. No. 62/202,549, filed on August 7, 2015. The '435 Application was filed with twenty claims; of which independent claims 1, 16 and 20 were shown as follows:

1. An inflatable paddle board, comprising:
a first inflatable chamber forming a stand-up board; and
a second inflatable chamber connected to the first inflatable chamber to form a curve-shaped front hull.
16. An inflatable paddle board, comprising:
a lower inflatable chamber forming a stand-up board; and
an upper inflatable chamber connected to the lower inflatable chamber, the upper inflatable chamber forming a rail around at least a portion of the lower inflatable chamber, and the combination of the lower and upper inflatable chambers forming a curve-shaped front hull.
20. A method of constructing an inflatable paddle board, comprising:
forming a stand-up board area from a lower inflatable chamber; and
connecting an upper inflatable chamber to the lower inflatable chamber to form a rail around at least a portion of the lower inflatable chamber;
providing a tent covering between the first inflatable chamber and the second inflatable chamber to form a curve-shaped front hull.

(Ex. 1002 at 10-12.)

44. In the first Office action, entered on May 22, 2017, claims 1-3, 8, 10-13, 16 and 19 were rejected as obvious over US 9,114,862 (“Dingel”) in view of US 6,394,018 (“Klimenko”); claim 20 was allowed; and dependent claims 4-7, 9, 14, 15, 17 and 18 were considered to contain allowable subject matter. (*Id.* at 42-46.)

45. With respect to the obviousness rejection the Office action stated that Dingel (Ex. 1018) discloses an inflatable paddle board as shown in Fig. 1, Fig. 3, Fig. 4 that includes an inflatable drop-stitch chamber (30), but did not disclose a second inflatable chamber connected to the first inflatable chamber to form a curve-shaped front hull. (*Id.* at 44-45.) Fig. 1, Fig. 3, Fig. 4 of Dingel are shown below:

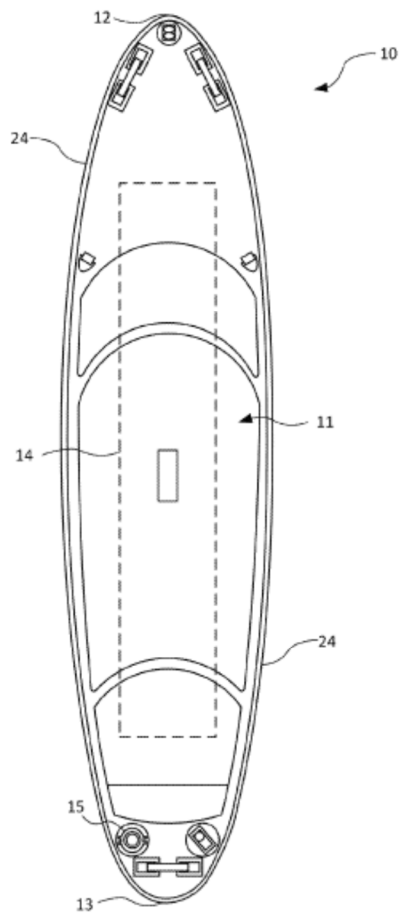


FIG. 1

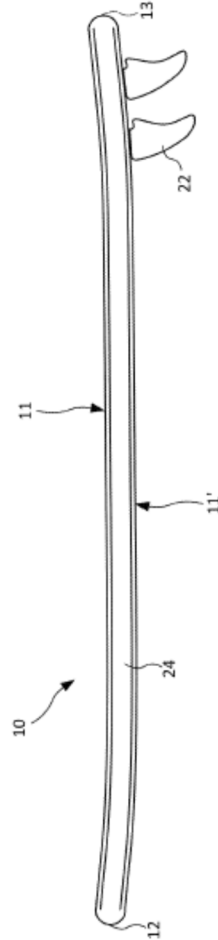


FIG. 3

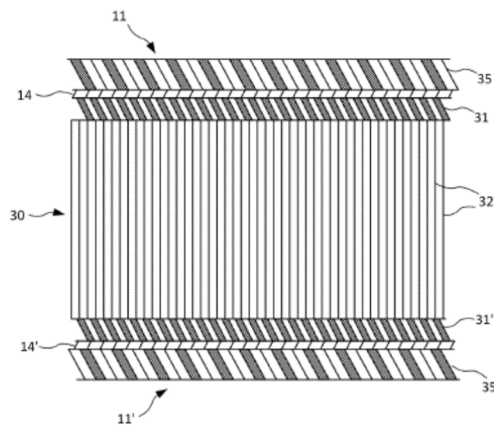
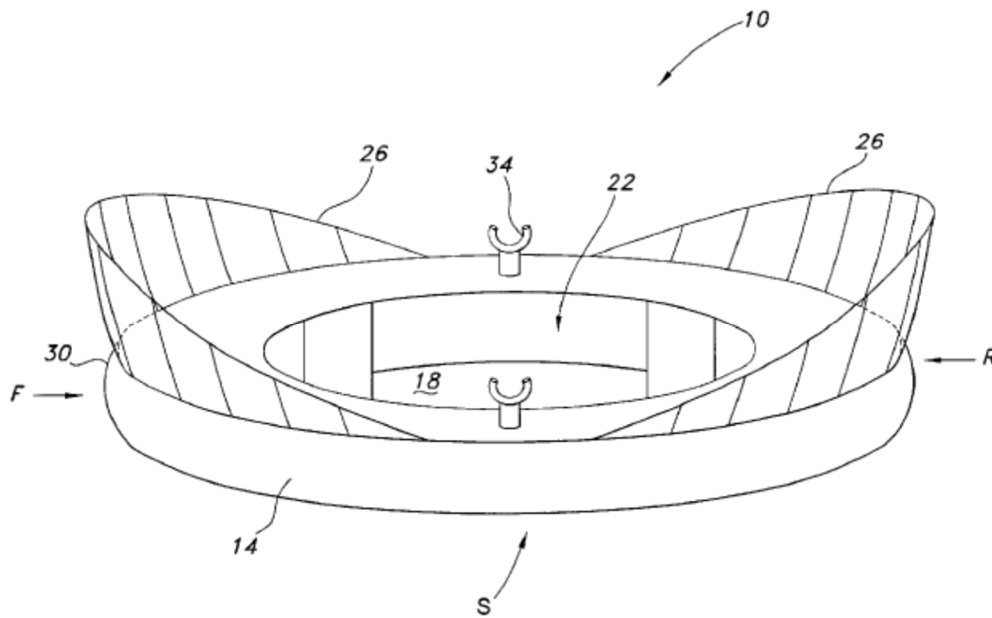


FIG. 4

(Ex. 1018 at FIGS. 1, 3, 4.)

46. The Office action then asserted that Klimenko (Ex. 1019) discloses an inflatable watercraft with a first inflatable chamber (14) connected to a second inflatable chamber (26) to form a curve-shaped front hull, where the second inflatable chamber at least partially overhangs the first. (Ex. 1002 at 44-45.) The figure of Klimenko is shown below:



(Ex. 1019 at FIGURE)

47. According to the Office action, it would have been obvious to incorporate the second inflatable chamber of Klimenko with the first inflatable chamber of Dingel to form a curve-shaped front hull of a paddle board as claimed. (Ex. 1002 at 44-45.)

48. On August 22, 2017, the Applicant filed an amendment and a response to the Office action (*see id.* at 52-59) in which independent claim 1 was amended to

incorporate the allowable subject matter of claim 4 and independent claim 16 was amended to incorporate the allowable subject matter of claim 17 as follows:

1. (currently amended) An inflatable paddle board, comprising:
a first inflatable chamber forming a stand-up board; and
a second inflatable chamber connected to the first inflatable chamber to form a curve-shaped front hull;
wherein the first inflatable chamber at least partially overhangs the second inflatable chamber, and the first and second inflatable chambers are interconnected with only one fill valve.

16. (currently amended) An inflatable paddle board, comprising:
a lower inflatable chamber forming a stand-up board; ~~and~~
an upper inflatable chamber connected to the lower inflatable chamber, the upper inflatable chamber forming a rail around at least a portion of the lower inflatable chamber, and the combination of the lower and upper inflatable chambers forming a curve-shaped front hull; and
a tent covering between the lower inflatable chamber and the upper inflatable chamber.

(*Id.* at 54-56.)

49. Additionally, new independent claims 21 and 22 were added to correspond to allowable claims 9 and 14 respectively as follows:

21. (new) An inflatable paddle board, comprising:
a first inflatable chamber forming a stand-up board; and
a second inflatable chamber connected to the first inflatable chamber to form a curve-shaped front hull;
wherein the second inflatable chamber under-hangs the first inflatable chamber for at least 5% of the length of the first inflatable chamber

22. (new) An inflatable paddle board, comprising:
a first inflatable chamber forming a stand-up board;
a second inflatable chamber connected to the first inflatable chamber to form a curve-shaped front hull; and
a tent covering between the first inflatable chamber and the second inflatable chamber

(*Id.* at 56-57.)

50. It is noted that the Applicant did *not* argue that Klimenko was non-analogous art.

51. On September 18, 2017, the Office action issued a final Office action that included indefiniteness rejections to claims 18, 21 and 22 under §112, otherwise the claims were allowed. (*Id.* at 70-74.)

52. On September 27, 2017, the Applicant conducted a telephone interview authorizing the Examiner to fix the rejected claims. Then, on October 3, 2017 the USPTO issued a Notice of Allowance (which included the interview summary). (*Id.* at 82-92.) Thereafter, the ‘435 Application issued as U.S. Pat. No. 9,862,466 on January 9, 2018.

53. U.S. Application Ser. No. 15/834,473 was filed on December 7, 2017 as a Continuation of the ‘435 Application and included thirteen claims, of which claims 1, 9 and 12 were independent as follows:

1. An inflatable paddle board, comprising:
an inflatable stand-up board chamber;
a curve-shaped front hull chamber at least partially overhanging at least a front portion of the inflatable stand-up board chamber; and
a tent covering between the inflatable stand-up board chamber and the curve-shaped front hull chamber.

9. An inflatable paddle board, comprising:
a lower inflatable stand-up board chamber;
an upper inflatable chamber connected to the stand-up board chamber, the upper inflatable chamber forming a rail around at least a portion of the stand-up board chamber, and the combination of the inflatable chambers forming a curve-shaped front hull; and
a tent covering between the stand-up board chamber and the upper inflatable chamber.

12. A method of constructing an inflatable paddle board, comprising:
forming an inflatable stand-up board chamber; and
connecting an upper inflatable chamber to the inflatable stand-up board chamber to form a rail around at least a portion of the inflatable stand-up board chamber;
providing a tent covering between the first inflatable chamber and the second inflatable chamber to form a curve-shaped front hull.

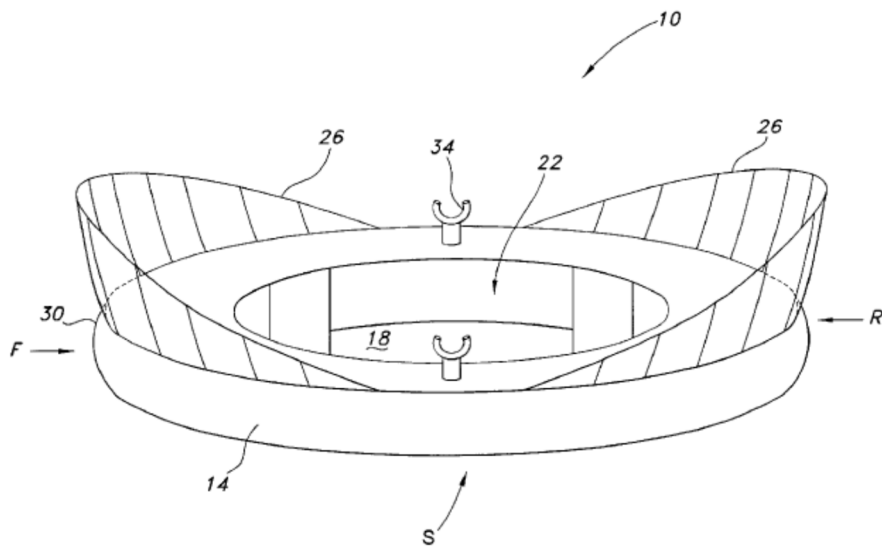
(Ex. 1003 at 18-19.)

54. The originally filed claims also included claim 5 that depended from claim 1:

5. The inflatable paddle board of claim 1, wherein the curve-shaped front hull chamber has sidewalls to form a rail around at least a portion of the inflatable stand-up board chamber.

(*Id.*)

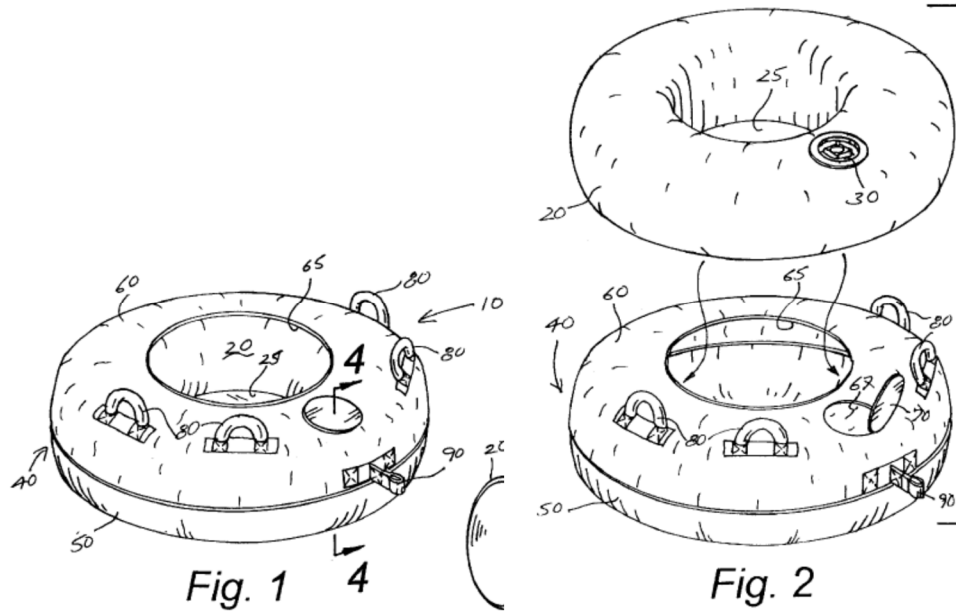
55. On November 5, 2018, the USPTO issued an Office action rejecting claims 1-13 on the ground of nonstatutory double patenting as being unpatentable over claims of the '466 Patent. (*Id.* at 50-51.) Additionally, claim 1 was rejected as being obvious over Klimenko in view of US 6,648,707 (“Peterson”). Klimenko (pictured below) was cited as disclosing an inflatable watercraft comprising an inflatable hull chamber (14) and a curve-shaped inflatable front deflector chamber (26) that at least partially overhangs the front portion of the inflatable hull chamber. The Office action stated that Klimenko disclosed all elements of pending claim 1 except for the claimed tent covering for an inflatable chamber. (*Id.* at 52.)



(Ex. 1019 at FIGURE).

56. Peterson was combined with Klimenko for Peterson’s disclosure of a cover for an inflatable vehicle that includes an inflatable hull chamber (20) and a

protective tent (40) covering the inflatable hull chamber as shown in Fig. 1 and Fig. 2 (reproduced below). (Ex. 1003 at 52.)



(Ex. 1020 at FIGS. 1, 2.)

57. On May 2, 2019, the Applicant filed an Amendment and Response to the Office action (Ex. 1003 at 70-76), which amended claim 1 “based on the allowable subject matter of claim 5” as follows:

1. (currently amended) An inflatable paddle board, comprising:
 - an inflatable stand-up board chamber;
 - ~~a curve-shaped front hull chamber at least partially overhanging on at least a front portion of the inflatable stand-up board chamber; and~~
 - stacked sidewalls to form a rail around at least a portion of a side of the inflatable stand-up board chamber; and
 - a tent covering between the inflatable stand-up board chamber and the rail ~~curve-shaped front hull chamber~~.

(*Id.*)

58. Independent claims 9 and 12 were also amended as follows, but without any discussion of the reason for the amendments in the Remarks.

9. (currently amended) An inflatable paddle board, comprising:
a lower inflatable stand-up board chamber;
an upper inflatable chamber ~~stacked on the lower inflatable connected to the~~
stand-up board chamber, the upper inflatable chamber forming a rail around at least a
portion of a side of the stand-up board chamber, and the combination of the inflatable
chambers forming a ~~curve-shaped~~ front hull; and
a tent covering between the stand-up board chamber and the upper inflatable
chamber.

12. (currently amended) A method of constructing an inflatable paddle board,
comprising:
forming an inflatable stand-up board chamber; and
connecting an upper inflatable chamber to the inflatable stand-up board chamber
to form a rail around at least a portion of a side of the inflatable stand-up board
chamber[[:]]

~~providing a tent covering between the first inflatable chamber and the second
inflatable chamber to form a curve-shaped front hull.~~

(*Id.*)

59. Once again, it is noted that the Applicant did *not* argue that Klimenko
nor Peterson were non-analogous art.

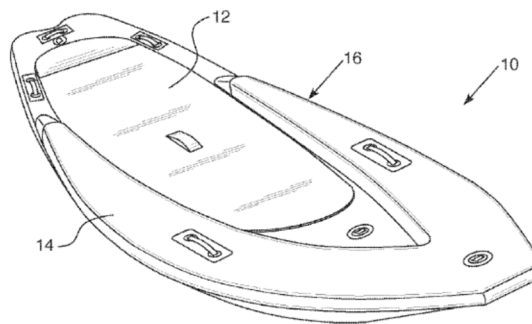
60. On June 12, 2019, the USPTO issued a final Office action in which
claims 1-4, 6-14 and 16 were rejected on the ground of nonstatutory double patenting
over the '466 Patent, while dependent claim 15 was considered to include allowable
subject matter. (*Id.* at 78-84.)

61. On August 5, 2019, the Applicant filed a Terminal Disclaimer with respect to the '466 Patent to overcome the double patenting rejection. (*Id.* at 95-100.)

62. On August 15, 2019, the USPTO issued a Notice of Allowance. (*Id.* at 102-109.) Afterwards, US Pat. No. 10,479,458 issued on November 19, 2019.

VI. THE LEVEL OF ORDINARY SKILL IN THE ART FOR THE '466 PATENT

63. The '466 Patent is primarily directed to an “inflatable paddleboard [that] includes an inflatable stand-up board chamber [and] ... a curve-shaped front hull chamber at least partially overhanging at least a front portion of the inflatable stand-up board chamber. The ... inflatable paddle board also includes a tent covering between the inflatable stand-up board chamber and the curve-shaped front hull member.” (Ex. 1001 at ABSTRACT.)



(Ex. 1001 at COVER.)

64. I have been informed and understand that a person of ordinary skill in the art (“POSITA”) is a hypothetical person who is presumed to have known the relevant art at the time of the alleged invention. Based upon my understanding of the

'466 Patent specification and claims, it is my opinion that the relevant Field of Technology or ("art") with respect to the '466 Patent is the field of inflatable watercraft. There are a number of parameters that are important and relevant to these inflatable watercrafts. Some of the most relevant parameters include considerations such as stability, durability, deflation, packing, transportability, cost of materials, and cost of the final product. These factors are all important for a successful, commercial, inflatable watercraft.

65. I have been informed and understand that the disclosure of patents and prior art references are to be viewed from the perspective of a person having ordinary skill in the art at the time of the alleged invention. I provide my opinion from the viewpoint of a person having ordinary skill in the art as of the earliest alleged priority date for the '466 Patent.

66. I have been informed that the following five factors inform the analysis for determining the level of ordinary skill in the art: (1) type of problems encountered in the art; (2) prior art solutions to those problems; (3) rapidity with which innovations are made; (4) sophistication of the technology; and (5) educational level of active workers in the field. *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995). I apply these factors in the paragraphs below in providing my opinion as to the level of one having ordinary skill in the art with respect to the '466 Patent.

67. The type of problems encountered in the art involving the field of inflatable watercraft includes design, material selection, and methods of manufacturing. Inflatable watercraft were developed to make the watercraft more easily transportable (when deflated). Another problem involved developing ways to provide the desired level of structural stiffness so that a person could stably stand on the watercraft. The overall weight and packed dimensions of the watercraft when deflated are also important variables to address.

68. There have been numerous prior art solutions developed to improve features associated with inflatable watercraft and to deal with certain specific shortcomings. The inflation pressure is an important variable. Higher inflation pressure generally can result in a stiffer, sturdier structure. Achieving that higher desired pressure can be challenging in the field where inflation takes place. Materials must be selected that can withstand higher pressures and assembled so that the pressures can be maintained without leaking during typical usage. Methods to allow for rapid deflation of the inflatable watercraft are also important.

69. The field of inflatable watercraft has seen very rapid innovation. (*See* Ex. 1014, Ex. 1015 (discussing evolution of the field).) The cited references show that the sport achieved rapid growth with new people taking up the sport to enjoy the opportunity to learn Stand-Up Paddling (SUP). Many times new participants

would come up with new ways to utilize the inflatable watercraft and new places to explore with a SUP.

70. The technologies employed evolved and improved rapidly as issues were identified and new ways were developed to address these issues. More simple solutions generally resulted in lower cost and easier to use products.

71. The education level of active workers in the field varies. Innovations were often driven by the end-users who envisioned new ways to utilize the technology. Design and manufacturing issues typically require engineering expertise to evaluate performance and improve designs.

72. Based on this understanding, it is my opinion that a POSITA with respect to the '466 Patent will have a B.S. or higher degree in Mechanical Engineering (or an equivalent degree/experience) with sufficient experience in design, manufacture, use of inflatable watercraft and/or the materials and components that make up such products (for example materials that can be utilized in drop-stitched chambers and withstand inflation pressures on the order of 15 psi). The type of experience is as relevant as the length of the experience. The more direct experience that involves design, manufacture, or use of inflatable watercraft for recreational activities is preferred. Additional education may substitute for some of the practical experience such as graduate degrees like M.S. or Ph.D. Likewise, certain direct experience may substitute for some more formal education. Due to the

modest design and implementation complexities in the field, a POSITA with respect to the '466 Patent will have an average-level of problem-solving acumen and would seek solutions to design, material selection, and manufacturing issues for inflatable watercraft problems, but would look to other areas of recreational watercraft, surfboards, boats, other inflatable structures, etc. to find similar solutions to similar problems confronted in the field.

73. Based on my education and professional experience, I believe that I qualify as understanding and possessing the knowledge and skills of a POSITA as of the August 2015 time period. I have a sufficient level of knowledge, experience, and expertise to provide expert opinions in the technology field of the '466 Patent. I have used my education and experience as described above, as well as my understanding of the knowledge, creativity, and experience of a person having ordinary skill in the art (POSITA) as of August 7, 2015, in forming the opinions expressed in this report, as well as any other materials discussed herein. Any time I refer herein to something as disclosed, obvious to combine, motivated to combine or reasonable expectations of success to combine or modify and/or refer to predictability, I am speaking from the perspective of a POSITA as of or prior to August 7, 2015 time frame. Otherwise, any time I refer to a POSITA in this declaration, I am referring to the time frame as of or prior to August 7, 2015. I reserve the opportunity to re-assess my opinions if the definition of a POSITA is

materially different than I provided. I do not expect my opinions to change if the definition of a POSITA is revised.

VII. CLAIM INTERPRETATION

A. The Principles of Patent Claim Interpretation (Also Known as Claim Construction)

74. I am not an attorney. For this report, I have been informed about certain aspects of the law that are relevant to my analysis and opinions as presented herein.

75. I understand that *inter partes* review (“IPR”) is a proceeding before the United States Patent & Trademark Office (“USPTO”) for evaluating the validity of issued patent claims. I understand that, in this *inter partes* review, a claim term is construed as it would be understood by a POSITA in view of the patent’s specification and prosecution history. I understand that the “specification” of a patent includes all the figures, discussion, and claims within the patent. I understand that the USPTO will look to the specification and prosecution history to see if there is a special definition for a given claim term, and if not, will apply the plain-and-ordinary understanding of the term according to a POSITA at the time in which the alleged invention was made. I also understand that this plain-and-ordinary definition must be made in light of the patent specification. For example, the plain-and-ordinary meaning of the term cannot be inconsistent with how the term is used in the patent specification.

76. I understand that the specification and prosecution of history of the patent is considered as being the “intrinsic record,” while materials and information outside of this intrinsic record are considered “extrinsic evidence.” Further, I understand that it is improper to rely to the extrinsic evidence for determining the meaning of a claim term if the intrinsic record is clear. That said, I also understand that certain extrinsic evidence (such as dictionaries, treatises and such) may be considered to help understand the plain-and-ordinary meaning of certain terms if the intrinsic record is not so clear on that point.

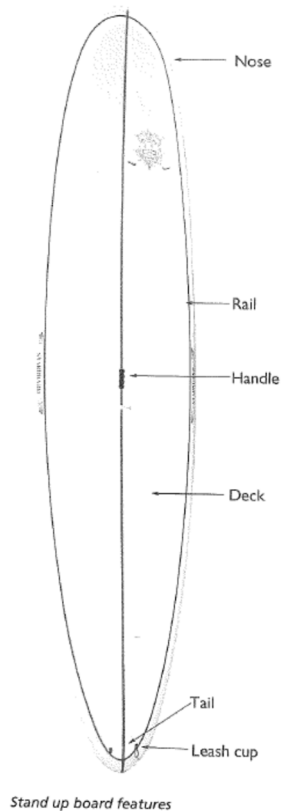
B. Interpreting Certain Claim Limitations from the '466 Patent

- 1. stand-up board should be construed as “*a generally elongated board (like a surfboard) that a user can stand upon and paddle over the water*”**

77. The plain and ordinary meaning to a POSITA of a stand-up paddle board is a generally elongated board (like a surfboard) that a user can stand upon and use a paddle to maneuver over the water. For example, U.S. 2013/0137319 to Haller *et al.* cited during the prosecution of the '466 Patent, explains that “[s]tand up paddleboarding involves employing an oversized surfboard in combination with a paddle for propulsion.” (Ex. 1012 at [0003].) Continuing, “[t]here are several types of stand up paddleboards currently available in the marketplace. Rigid stand up paddleboards are made of foam or fiberglass, much like surfboards....” (*Id.* at [0004].) Further, “[i]nflatable stand up paddleboards thus represent an excellent

alternative to rigid products. Inflatable stand up paddleboards are typically made of drop stitched material allowing them to be inflated to very high pressures, generally in the range from 12 psi to 15 psi.” (*Id.* at [0005].) “An inflatable stand up paddleboard having a top surface for supporting a user and a bottom surface for residing on water.” (*Id.* at [0011].) The internal inflation pressure is beneficial in that a compact deflated structure can be “expanded” by the pressure into the final configuration for recreational use as a SUP. Likewise, the inflation pressure helps to provide a more stable platform for the user to stand on during use of the SUP.

78. This is consistent with extrinsic sources. For example, the 2011 book, “Stand Up Paddling Flatwater to Surf and Rivers,” by Casey (“Casey”)(Ex. 1014) explains: “The majority of stand up paddleboards (SUPs) are made from fiberglass and epoxy wrapped over a foam core. **Inflatable**, wood, and hollow fiberglass boards are also available. The boards have fins, like traditional surfboards, and a leash so the paddler won’t lose the board in the water. The front of the board is called the nose, the rear is called the tail, the top is the deck, and the sides are referred to as the rails. The bottom is either the hull, or just the bottom.” (Ex. 1014 at 13.) Casey also explains that the hull/bottom of the stand up boards may be made “with a round-bottomed displacement hull **similar to some kayaks.**” (*Id.*)



(*Id.* at 26.)

79. While standup boards allow standing operation, they also may permit paddling from the user in a sitting position and/or paddling from a user while kneeling. (Ex. 1014 at 19; Ex. 1015 at 52.) Some adventurous users have gone so far as to perform Yoga moves while on a paddle board. (Ex. 1015 at 79-95.)

80. The '466 Patent does not define a stand-up paddle board or change the plain and ordinary meaning of the term. The patent does describe the features that are inherent in a standup paddle board and these features are consistent with cited references. (*See* Ex. 1014; Ex. 1015.) That said, the '466 Patent discloses a “a board chamber 12 to form a stand-up board area.” (Ex. 1001 at 2:32-33.) The '466 Patent

also discloses “the lower chamber 12 is the shape and outline of a stand-up board. Hence, it may be referred to as the board chamber 12.” (*Id.* at 2:56-58.) As shown in Figs. 2A and 2B, this stand-up board chamber 12 appears to show a generally elongated board, like a surfboard, that a user can stand upon and paddle to maneuver over or through the water.

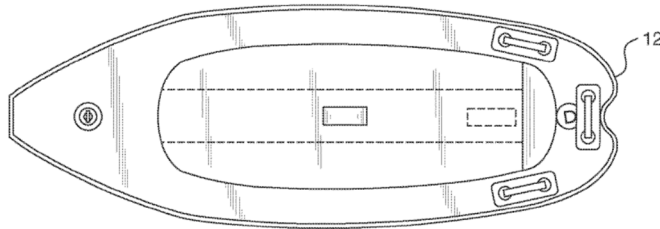


FIG. 2A

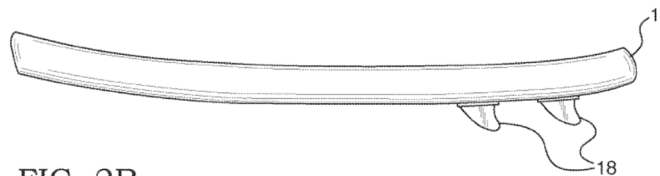


FIG. 2B

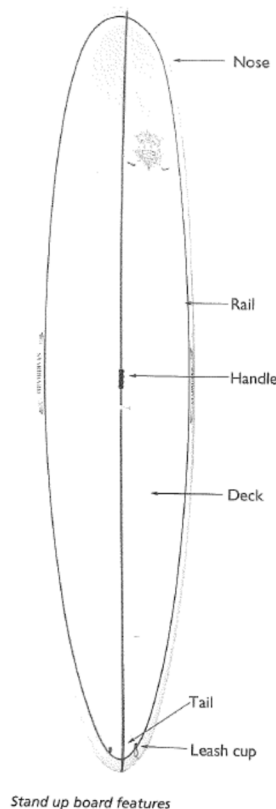
(Ex. 1001 at FIGS. 2A, 2B.)

81. Additionally, the '466 Patent discloses that the inflatable paddle board 10 “*may* also include one or more fins 18.” (Ex. 1001 at 3:35-38.) So, the '466 Patent explains that fins are optional. Further, the '466 Patent does not describe its stand-up board as having or requiring a leash or strap.

82. As such, it is my opinion that the appropriate construction of “stand-up board” is “*a generally elongated board (like a surfboard) that a user can stand upon and paddle over the water.*”

2. “rail” should be construed as “*structure extending along at least a portion of the peripheral sides of the paddleboard*”

83. As introduced above, Casey defines a “rail” with respect to stand-up paddle boards as the sides around the paddle board. (Ex. 1014 at 13.) Indeed, the “Glossary” section of Casey also expressly defines “rail” as “[e]dge or side of board.” (*Id.* at 24.)



(Ex. 1014 at 14.)

The Powers reference is consistent with the Casey reference. Powers explains that the “rail” is “the edges or sides of the board ... If you want a more recreational type of SUP you’ll go for thicker rails and hence gain greater stability.” (Ex. 1015 at 11-12.)

84. The ’466 Patent does not define or re-define the meaning of a “rail,” but the way that the term is used by the ’466 Patent is very similar to the plain and ordinary meaning as defined by Casey (Ex. 1014.) The ’466 Patent discloses a “rail chamber 14” that forms a “rail” around the stand-up board area. (Ex. 1001 at 2:31-36.) Further, Figs 1, 2C and 2D illustrate the structure of the disclosed “rail chamber 14.”

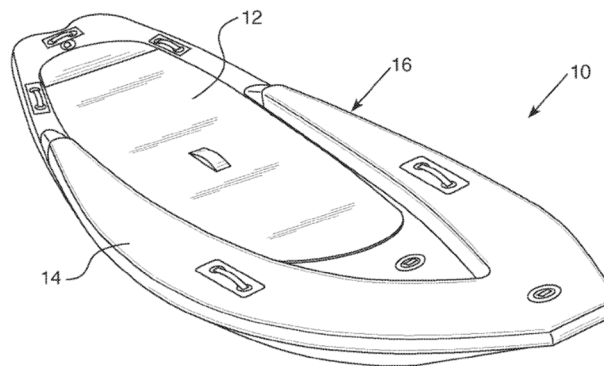


FIG. 1

(Ex. 1001 at FIG. 1.)

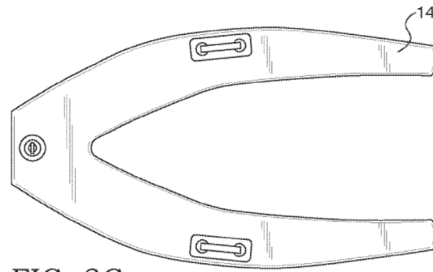


FIG. 2C



FIG. 2D

(Ex. 1001 at FIGS. 2C, 2D.)

85. Obviously, the described and illustrated rail chamber 14 does not represent the actual edges or sides around the paddle board as defined by Casey or Powers. However, the described and disclosed rail chamber 14 of the '466 Patent is indeed a structure extending along at least a portion of the sides of the paddle board. The rail chamber forms what is essentially a partial boundary around the stand-up well.

86. As such, it is my opinion that a correct interpretation of the “rail” in the '466 Patent is a *“structure extending along at least a portion of the peripheral sides of the paddleboard.”*

3. “tent covering” should be construed as “a sheet of material covering one or more objects to provide a shape over or between such objects.”

87. The term “tent covering” does have a plain and ordinary meaning to a POSITA. The plain and ordinary meaning of “tent covering” basically follows the meaning of the definition of a “tent” which is a “portable shelter, as of canvas,

stretched over a supporting framework of poles with ropes and pegs” and “to form a tent over.” (See Ex. 1013.)

88. The '466 Patent does not define a “tent covering.” But the '466 Patent discloses numerous examples of what a “tent covering” can be and its function. For example, the '466 Patent discloses the tent 16 can overlap a pair of objects, to provide desired shapes for the structure. The tent material essentially provides an “overlap” between the upper chamber and the lower chamber:

“a tent material may overlap between the lower chamber 12 and the upper chamber 14. The tent 16 may be made of PVC or other suitable material. The tent 16 may be connected (e.g., glued, sewed, or otherwise attached) to each chamber 12 and 14 and extend therebetween to cover the overlap between the chambers 12 and 14. The tent 16 forms a shape that is unique to this board, referred to herein as a “hull” shape, as it mimics the hull of a boat or ship. The tent 16 also forms a rail shape that gives the board more stability. The shape also enables the rails of the board to slope outward and away from the center of the board chamber 12.”

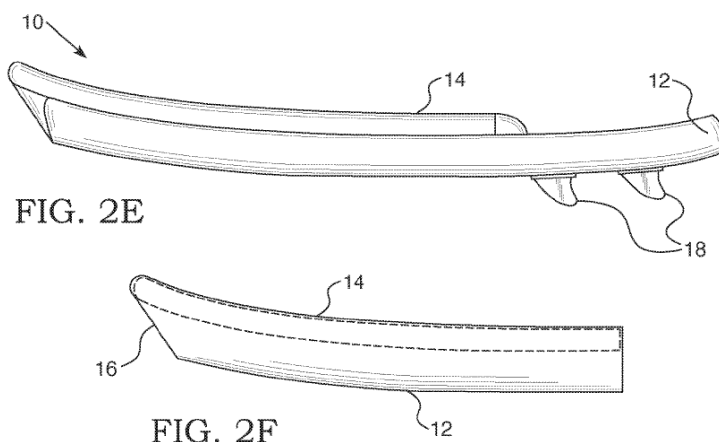
(Ex. 1001 at 3:18-29.)

89. In other passages, the '466 Patent discloses the tent can be its own inflatable chamber (although this disclosure is just a disclosed concept and is not sufficiently described or illustrated in any of the figures).

“It is noted that the tent 16 may also be another chamber (e.g., drop stitch chamber), or the tent 16 may be part of the rail chamber 14 and/or board chamber 12 that is folded to connect to the bottom chamber. The tent 16 can be inflatable itself, or be made taut using other construction methods. In another example, the tent 16 can have an inflatable tube or chamber inside, e.g., to aid in pushing the tent structure outward and reduce slack.”

(*Id.* at 4:11-18.)

90. The figures of the '466 Patent (for example, Figs. 2E and 2F) appear to show the tent 16 as a sheet of material covering over the front ends of board chamber 12 and rail chamber 14 to provide an outer shape between the two chambers.



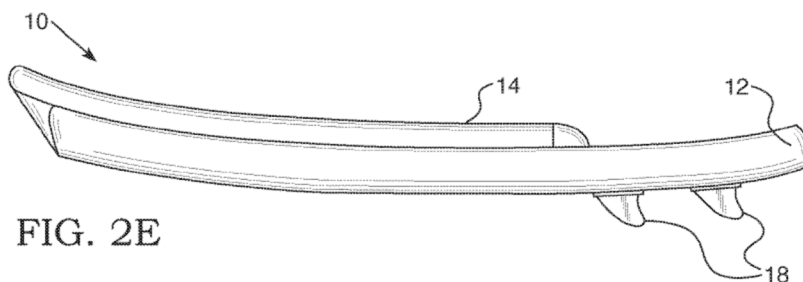
(Ex. 1001 at FIGS. 2E, 2F.)

91. As such, an appropriate construction of how “tent covering” is used in the '466 Patent is “a sheet of material covering one or more objects to provide a shape (for example, a hull shape or a rail shape) over or between such objects.”

4. “over-hangs” should mean “*project or extend beyond*”

92. The plain and ordinary meaning of “over-hang” is to “project or extend beyond.” (Ex. 1013 at 3.) This is how the term is used in the '466 Specification. For example, the Specification discloses that the upper chamber 14 may “overhang” the lower chamber and that the lower chamber may also “overhang” the upper chamber. (Ex. 1001 at 2:63-3:3.) See, for example, Fig. 2E again, in which the upper chamber

14 overhangs (i.e., projects or extends beyond) the front end of the lower chamber 12; and in which the lower chamber 12 overhangs (i.e., projects or extends beyond) the back end of the upper chamber 14.



(Ex. 1001 at FIG. 2E.)

5. under-hangs should mean “*protruding from beneath*”

93. The plain and ordinary meaning of “under-hangs” may be determined from the definition of “under-hung,” which is “protruding from beneath.” For example, the dictionary definition of “under-hung” is “protruding from beneath.” (Ex. 1013 at 5.)

94. Dependent claim 8 recites that “the second inflatable chamber under-hangs the first inflatable chamber” Ex. 1001 at 5:29-30. And claim 19 recites an inflatable paddle board comprising, among other limitations, “wherein the second inflatable chamber under-hangs the first inflatable chamber for at least 5% of the length of the first inflatable chamber.” *Id.* at 6:35-37. But there is no specific disclosure in the Specification of a rail-chamber underhanging the board chamber other than the following unsupported expression of possible various orientations of the inflatable structures:

“The top chamber may overhang the lower chamber by about 8 inches. However, other examples, including no overhang are also possible (e.g., depending on the desired shape of the board). For example, **the design may include under- and/or overhanging inflatable chambers (e.g., the top chamber overhangs and/or under-hangs the bottom chamber).**”

(Ex. 1001 at 1:47-53.)

95. No reference is made to any specific figures and no figures illustrate or show a rail chamber underhanging a board chamber as claimed. There is no disclosure indicating how or why such under-hang rail would be provided. As such, since this term is not otherwise redefined in any way by the Specification, the term should be construed according to its plain and ordinary meaning – “*protruding from beneath.*”

6. Remaining Claim Terms

96. It is my opinion that the remaining terms should be construed based upon their plain and ordinary meanings. My remaining opinions set forth herein do not rise and fall on any of these proposed constructions. That said, to the extent any terms are construed differently than I opine herein, I reserve the opportunity to consider such different constructions in my analyses.

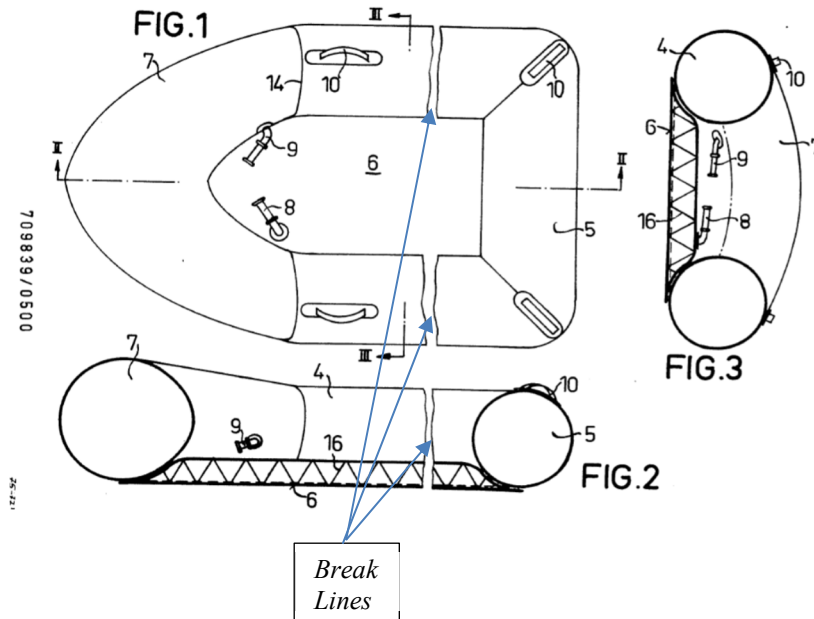
VIII. THE PRIOR ART

A. Hoffmann (Ex. 1006; Translation, Ex. 1007)

97. Hoffmann was not considered during prosecution of the '466 Patent. Hoffmann discloses an inflatable boat with a surfboard-shaped, drop-stitched floor 6

that provides “**standing options**” for occupants. “[T]he manufacture of the floor from so-called spacer fabric is also of importance, since this type of material is essential to achieve the desired extreme lightweight construction and to realize it to the full extent. At the same time, when in a state of use, the inflatable boat has almost flat floor surfaces inside and out, which offer the occupants comfortable, tip-proof seating or standing options without additional inserts....” (Ex. 1007 at [0005].)

98. The drop-stitched floor 6 is glued to inflatable side tubes 4 to form a rail that includes a curved bow. “The inflatable boat depicted is constructed from two straight extending side tubes 4 ... and a continuous floor 6. The side tubes 4 continue towards the front via curved pieces 7 into the bow section, where they converge in a truncated bow tip.” (*Id.* at [0009].) “The floor 6 is made of a so-called spacer fabric with connecting threads 16 woven between two outer fabric plies and is glued to the gunwale tubes 4, 5, 7 over its entire circumference...” (*Id.* at [0010].) Hoffmann discloses that it could be equipped with rowlocks (*see id.* at [0012]), which would inform a POSITA that the craft can be used with paddles or similarly with oars.



(Ex. 1006 at FIGS. 1-3.)

99. The “break lines”³ (see Figure above) in Fig. 1 and Fig. 2 are a mechanism used in mechanical drawings to indicate that there is additional structure (not shown) that will make the inflatable craft longer than it appears in these three Figures. When lengthened, the floor 6 will have even more of a surfboard shape. The break lines are a mechanism regularly used by drafting professionals and within CAD software to omit showing an entire component when there is no additional useful info to gather from that underlying structure. In Fig. 1 and Fig. 2 above, the break lines denote that the “broken” or “interrupted” portion (rails in this case) are essentially uniform in dimension between the two break lines. By using the break

³ “Break Lines”: a mechanism taught in University Mechanical Design classes such as MECH 10 (*Engineering Graphics and Computer Aided Design*) (I taught this class at Santa Clara University).

lines, the aspect ratio of the inflatable water craft is reduced (potentially nearing 1:1) allowing for figures that are more readily understood.

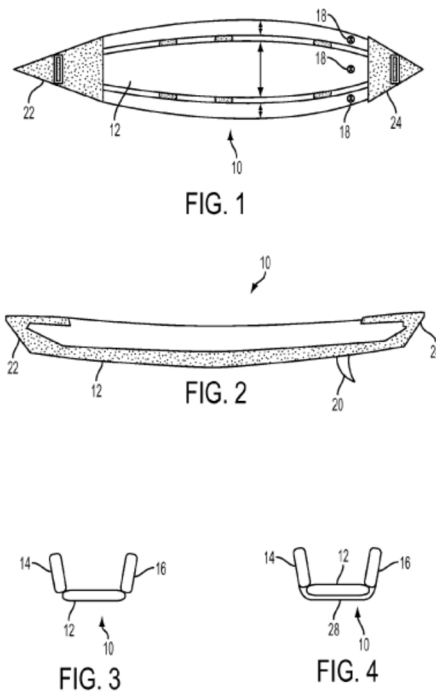
B. Hoge (Ex. 1009)

100. Hoge was not considered during prosecution of the '466 Patent. However, the Applicants cited a Non-Patent Literature document (Ex. 1017, "Cited NPL.") during prosecution and admitted it to be prior art. (*See* Ex. 1001 at Cover.) This Cited NPL appears to be an Internet Archive reproduction of a Boat Owners World website that advertised the "patent pending" Sea Eagle 473rl RazorLite Inflatable Kayak Drop Stitch Inflatable Kayak. Hoge appears to be a patent related to the Cited NPL. However, there are significant differences in the disclosure. For example, Hoge discloses and describes the fabric floor 28, but the Cited NPL does not disclose or describe this component. Additionally, Hoge discloses that its drop stitch chambers can be inflated to a pressure of "10 psi, 15 psi or greater psi." (Ex. 1009at [0031].) Note that the Cited NPL discloses that its drop stitch chambers are inflated "up to 12 psi." (Ex. 1017.) Additional differences include differences between the photos of the Cited NPL and the drawings in Hoge.

101. Hoge discloses an "inflatable kayak includes an inflatable floor made of high pressure drop stitch material; and inflatable sides made of high-pressure drop stitch material formed at port and starboard sides of the inflatable floor, respectively. The drop stitch inflatable sides can be glued or welded directly to the port and

starboard sides of the inflatable floor, and the inflatable sides are configured to be inclined outboard from the inflatable floor.” (Ex. 1009 at ABSTRACT.) As shown in the Figures below, the drop stitched inflatable floor 12 is generally shaped as a surfboard, and the inflatable sides 14, 16 form a rail around the inflatable floor 12. Further, a tent covering material (fabric floor 28) as shown in Fig. 4, covers the bottom hull of the craft. (*See id.* at [0032].)

102. Hoge discloses that the kayak may also include a rigid bow construction that enables the user to cut through waves and paddle faster. (*Id.* at [0040].)

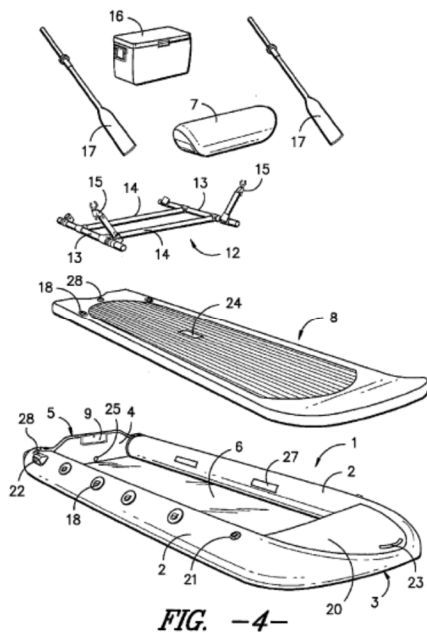


(Ex. 1009, FIGS. 1-4.)

C. Swan (Ex. 1010)

103. Swan was not considered during prosecution of the '466 Patent. Swan discloses an “inflatable shallow draft fishing boat having a removable, **inflatable**

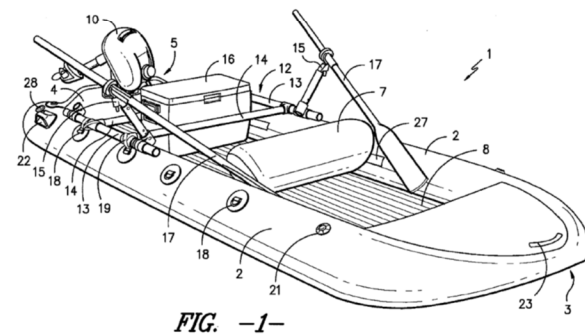
paddleboard floor that provides stable flotation for at least two standing adults, the boat also including an adjustable, detachable rowing frame. The boat can be maneuvered and propelled by oars. The paddleboard floor may be held in place by frictional engagement when the boat and the paddleboard are inflated; alternatively, the paddleboard may be removed and function independently as a stand-up paddleboard that can be used for fishing, swimming, or similar recreational water sports.” (Ex. 1010 at ABSTRACT.)



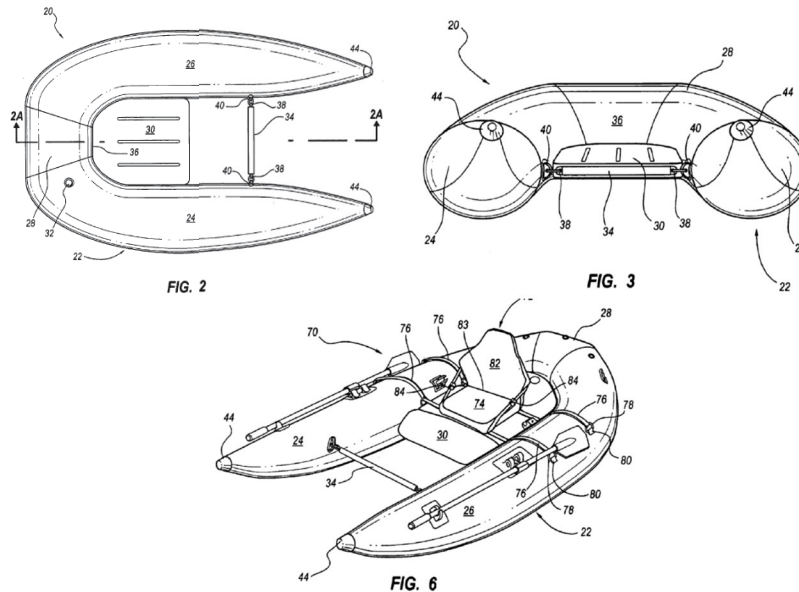
(Ex. 1010 at FIGS. 1, 4.)

D. Scadden (Ex. 1011)

104. Scadden was not considered during prosecution of the '466 Patent. Scadden discloses an inflatable float boat that includes “a unitary twin pontoon inflatable hull that in itself serves as a lightweight float boat having a pair of stern connected, spaced apart inflatable pontoons. The hull includes a seat, a foot rest, a



seat back and holder for oars. Adding a lightweight **standing deck** and a safety bar provides a lightweight, easily transported float boat in which a fisherman can sit, **or stand**, during boat travel.” (Ex. 1011 at 2:16-23.) “The pontoons 24 and 26, transom 28 and platform 30 are all made from durable flexible materials, such as reinforced neoprene rubber, that can **inflate** to the required shapes.” (*Id.* at 23-26.) “A user’s feet, **paddles**, or oars, (not shown) can be used to propel and control direction of travel of the boat 20.” (*Id.* at 4:48-49.)

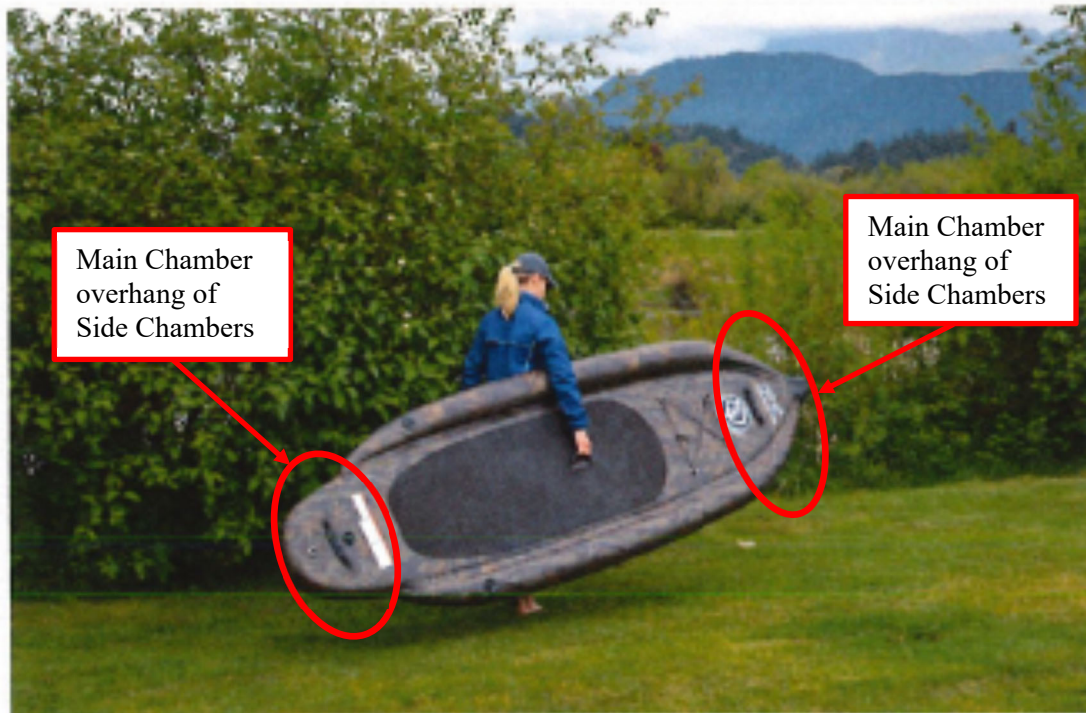


(Ex. 1011 at FIGS. 2, 3, 6.)

E. Airhead SS (Ex. 1021)

105. Airhead SS Camouflage ISUP Review (“Airhead SS”) was not considered during prosecution of the ’466 Patent. Airhead SS discloses an inflatable paddle board consisting of a first inflatable chamber (“main chamber”) forming a stand-up (SUP) board. Airhead SS also discloses a second inflatable chamber (“side

chambers”) connected to the sides of the first inflatable chamber (“main chamber”). (Ex. 1021 at 1-4.) “This is one of the most stable inflatable SUP boards on the market.” (*Id.* at 2.) “The main body can be inflated up to 15 PSI. The side chambers can be inflated up to 9 PSI.” (*Id.* at 4.)



(Ex. 1021 at 6.)

F. Hobie iSeries (Ex. 1022)

106. The Hobie iSeries (“inflatable series”) paddle board was not considered during the prosecution of the ’466 Patent. Similar to the Airhead SS, the Hobie iSeries discloses an inflatable paddle board consisting of a first inflatable chamber (main chamber) forming a stand up board and a second inflatable chamber (side chambers) connected to the first inflatable chamber (main chamber). (Ex. 1022 at 2.)

10'9" SPORTSMAN



Inflatable Series

10'9" Sportsman

8' Day Trip Air

12'6" Tour

10'6" Tour

10'8" Adventure

10' Coaster

(Ex. 1022.)

IX. THE PRINCIPLES AND LAW OF PATENT INVALIDITY

107. I am not an attorney. For the purpose of this report, I have been informed about certain aspects of the law that are relevant to my analysis and opinions as presented herein.

108. **Invalidity by Anticipation:** I understand that a patent is invalid as anticipated only if each and every element and limitation of that claim is publicly disclosed—either expressly or inherently—in a single prior art reference. I understand that such anticipation requires the presence in a single prior art disclosure of all elements of the claim arranged as in the claim. I further understand that for a

step or limitation to be inherent in a reference, the step or limitation must necessarily and inevitably occur or be present when one follows the teachings of the reference.

109. **Invalidity by Obviousness:** I understand that a patent claim may be unpatentable if the claimed invention would have been obvious to persons having ordinary skill in the art in the field of the technology of the patent at the time the invention was made. A claim that is obvious may be unpatentable even if all the requirements cannot be found in a single prior-art reference.

110. I understand that obviousness is analyzed from the perspective of a hypothetical person of ordinary skill in the art (“POSITA”) at the time of the alleged invention. I also understand that a POSITA is presumed to have been aware of and be able to understand the disclosures of all pertinent prior art at the time of the alleged invention.

111. As part of this inquiry, I understand and have considered the level of ordinary skill in the art that someone would have had at the time of the invention. To determine the level of ordinary skill, I have considered the levels of education and experience of persons working in the field; the types of problems encountered in the field; and the sophistication of the technology.

112. I understand that an obviousness analysis involves comparing a claim to the prior art to determine whether the claimed invention would have been obvious to a POSITA in view of the prior art, and in light of the general knowledge in the art

at the time the invention was made. I also understand that the invention may be deemed obvious when a POSITA would have reached the claimed invention through routine experimentation.

113. I understand that one may establish obviousness by combining or modifying the disclosures of the prior art to achieve the claimed invention. It is also my understanding that where there is a reason to modify or combine the prior art to achieve the claimed invention, there must also be a reasonable expectation of success in so doing to render the claimed invention obvious. I understand that the reason to combine prior art references can come from a variety of sources, not just the prior art itself or the specific problem the patentee was trying to solve, but that it cannot come from hindsight recognition of the benefits or advantages of the combination. I also understand that the references themselves need not provide a specific hint or suggestion of the alteration needed to arrive at the claimed invention; the analysis may include recourse to logic, judgment, and common sense available to a POSITA.

114. I understand that when there is some recognized reason to solve a problem, and there are a finite number of identified, predictable solutions, a POSITA has good reason to pursue the known options within his or her technical grasp. If such an approach leads to the anticipated success, it is likely not the product of innovation, but rather of ordinary skill and common sense. In such a circumstance, when a patent simply arranges old elements with each performing the same function

it had been known to perform and yields no more than one would expect from such an arrangement, the combination is obvious.

115. I understand that when considering the obviousness of an invention, one should also consider whether there are any objective indicia that support the non-obviousness of the invention. I further understand that objective indicia of non-obviousness include failure of others, copying, unexpected results, information that “teaches away” from the claimed subject matter, perception in the industry, commercial success, and long-felt but unmet need. I also understand that for objective indicia of non-obviousness to be applicable, the indicia must have some sort of nexus to the subject matter in the claim that was not known in the art. I understand that this nexus includes a factual connection between the patentable subject matter of the claim and the objective indicia alleged.

116. Finally, I understand that the U.S. Patent Office (“USPTO”) may rely upon certain exemplary rationales in reviewing patent applications or patents to understand whether the subject matter of the claims is obvious. I understand that the following is the list of exemplary rationales relied upon by the USPTO:

- Combining prior art elements according to known methods to yield predictable results;
- Simple substitution of one known element for another to obtain predictable results;
- Use of a known technique to improve similar devices (methods, or products) in the same way;

- Applying a known technique to a known device (method, or product) ready for improvement to yield predictable results;
- “Obvious to try” – Choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success;
- Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations are predictable to one of ordinary skill in the art; and
- Some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

X. COMPARING THE ’466 PATENT CLAIMS WITH THE PRIOR ART

- A. “An inflatable paddle board, comprising:” (Claim 1, preamble);
“An inflatable paddle board, comprising:” (Claim 15, preamble);
“An inflatable paddle board, comprising:” (Claim 19, preamble);
“An inflatable paddle board, comprising:” (Claim 20, preamble);
“A method of constructing an inflatable paddle board,
comprising:” (Claim 18, preamble).**

117. As discussed above in Section VIII.A (and as shown below in this Section X), Hoffmann discloses an inflatable paddle board and a method for constructing an inflatable paddle board.

118. As discussed above in Section VIII.B (and as shown below in this Section X), Hoge discloses an inflatable paddle board and a method for constructing an inflatable paddle board.

119. As discussed above in Section VIII.C (and as shown below in this Section X), Swan discloses an inflatable paddle board and a method for constructing an inflatable paddle board.

120. As discussed above in Section VIII.D (and as shown below in this Section X), Scadden discloses an inflatable paddle craft (with a stand-up platform) and a method for constructing an inflatable paddle craft (with a stand-up platform).

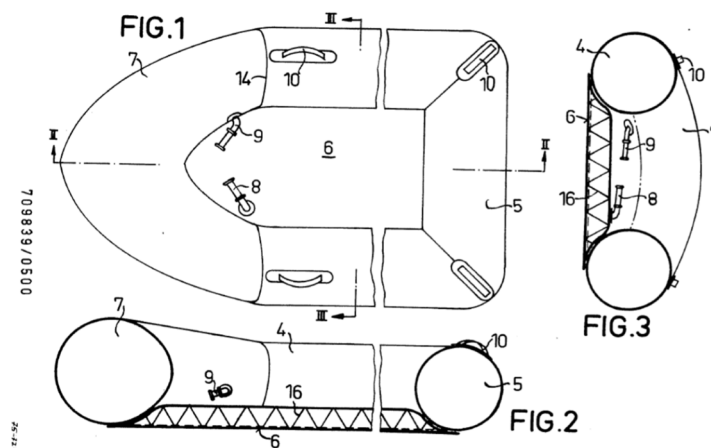
121. As discussed in Section VIII.E (and as shown below in this Section X), Airhead SS discloses an inflatable paddle board (SUP).

122. As discussed in Section VIII.F (and as shown below in this Section X), Hobie iSeries discloses an inflatable stand up paddle board.

- B. “a first inflatable chamber forming a stand-up board”
(Claim 1.a);
“a lower inflatable chamber forming a stand-up board”
(Claim 15.a);
“forming a stand-up board area from a lower inflatable chamber”
(Claim 18.a);
“a first inflatable chamber forming a stand-up board.”
(Claim 19.a);
“a first inflatable chamber forming a stand-up board.”
(Claim 20.a).**

123. Hoffmann discloses both an inflatable stand-up board chamber (elongated drop-stitched floor 6 having a generally surfboard shape with a truncated bow tip) and a step of forming the inflatable stand-up board chamber 6. “The invention relates to inflatable boats with two parallel side tubes that converge in a **truncated bow tip ... and a flat floor that connects them.**” (Ex. 1007 at [0001]); “... the **manufacture of the floor from so-called spacer fabric** is also of importance, since only with this the desired extreme lightweight construction can be realized to the full extent. At the same time, when in a state of use, the inflatable

boat has almost flat floor surfaces inside and out, which offer the occupants comfortable, tip-proof seating or **standing options** without additional inserts....” (*Id.* at [0005].) “The inflatable boat depicted is constructed from two straight extending side tubes 4 ... and a continuous floor 6. The side tubes 4 continue towards the front via curved pieces into the bow section, where they converge in a truncated bow tip. (*Id.* at [0009].) “**The floor 6 is made of a so-called spacer fabric with connecting threads 16 woven between two outer fabric plies** and is glued to the gunwale tubes 4, 5, 7 over its entire circumference. **A filling valve with a tube connector 8 is provided** in one of the curved pieces 7 **for inflating the floor.**” (*Id.* at [0010].)



(Ex. 1006 at FIGS. 1-3.)

124. As shown in the above Figures, Hoffmann’s inflatable stand-up board chamber 6 is a *lower* chamber as compared to the *upper* side tubes 4 & 7. Figs. 1-3 of Hoffmann are reliable to a POSITA for illustrating relationship between the stand-

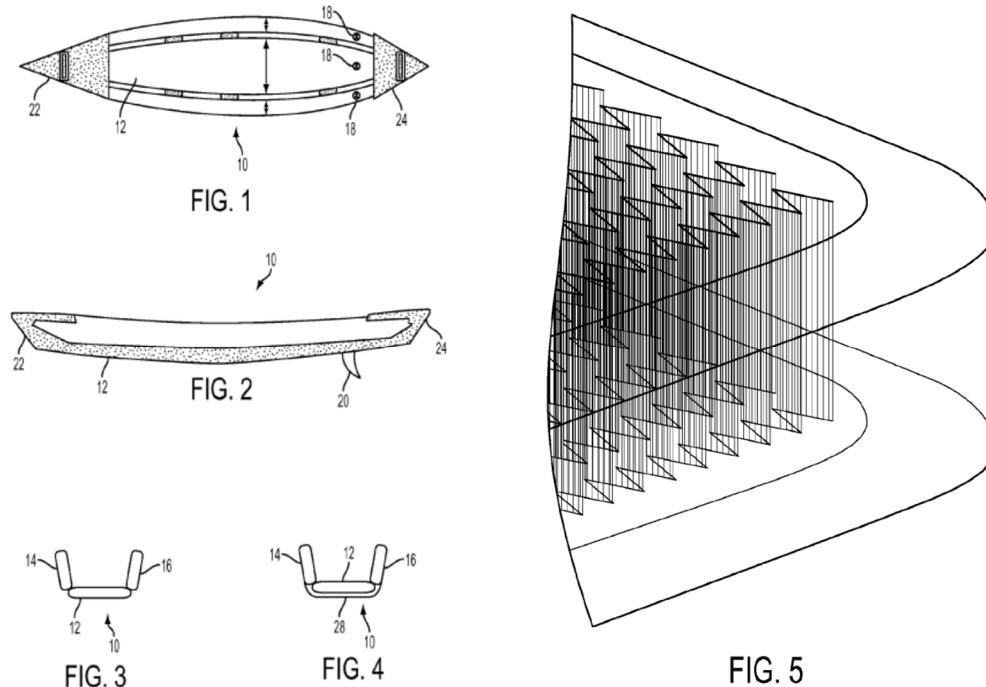
up board chamber 6 and the side tubes 4 & 7 because Hoffmann specifically describes the drawings of Figs. 1-3 as “schematically” showing an exemplary embodiment (“schematically” means that the drawings show the main form or features of the boat). (Ex. 1007 at [0008].) Additionally, Hoffmann describes Fig. 1 as “a plan view of an inflatable boat in an inflated state ready for use,” Fig. 2 as “a sectional view along line ||-||” and Fig. 3 as “a sectional view along line |||-||| in Fig. 1.” (*Id.*) These statements further reflect that Hoffmann intended that Figs. 1-3 to be representative of an actual inflatable boat “ready for use” and not merely a conceptual or abstract representation. Additionally, Figs. 1-3 are consistent with the structural and positional descriptions of the construction of the boat as set forth throughout and explicitly in paragraphs [0003], [0006], [0007], [0009] and [0010] and the claims. Finally, Hoffmann expressly discloses which components are not shown in detail, “[t]he inflatable boat can be provided with carrying straps 10 in the bow and stern areas and with other equipment parts that are not shown in more detail for the sake of clarity, such as rowlocks, motor mounts, mooring keys, and the like.” (*Id.* at [0012].) As such, a POSITA would expect that the components and equipment that are shown in the figures, such as the inflatable side tubes 4, 7 and the inflatable floor 6, are shown in detail for clarity. Finally, the Figures are consistent with each other with respect to the stacked and overhanging relationships.

125. Hoge discloses an inflatable stand-up board chamber (inflatable floor 12) made of high-pressure drop stitch material and inflated to a pressure of 15 psi as well as a step of forming the inflatable stand-up board chamber 12. (Ex. 1009 at [0030].) As shown in Fig. 1, Hoge's inflatable floor 12 is an elongated board generally in the shape of a surfboard, which is consistent with the disclosure indicating that the kayak is between 9-21 feet in length and between 22-32 inches thick. **"As shown in FIGS. 1 and 2, the inflatable kayak 10 includes an inflatable floor 12 made of high-pressure drop stitch material.** The inflatable floor 12 may be made of 1000 denier polyester fabric but may be made of other stronger or weaker fabric materials. An example of the drop stitch material is shown in FIG. 5 where thousands of drop stitches are provided to maintain an equal distance between the top and bottom surfaces of the inflatable floor 12. The drop stitch threads may be in a linear, zigzag or random pattern. The drop stitch thread may be configured in linear, or various other patterns including "X" and "V" patterns. **The use of drop stitch material in the floor 12 allows the floor 12 to be inflated to a pressure of 15 psi."** (Ex. 1009 at [0030]); "The inflatable kayak 10 may have a length of between 9-21 feet, a beam may be 22-32 inches, and a thickness of the drop stitch material used for the inflatable floor 12 and the inflatable sides 14, 16 may be between 3-6 inches." (*Id.* at [0034].).



DROPSTITCHDECK

"Drop Stitch" refers to a method of construction that allows for much higher inflation pressures. Thousands of tiny threads connect the top and bottom layers of the deck, counterbalancing air pressure when it is inflated. This allows for remarkable structural rigidity (and increased performance) without sacrificing portability.

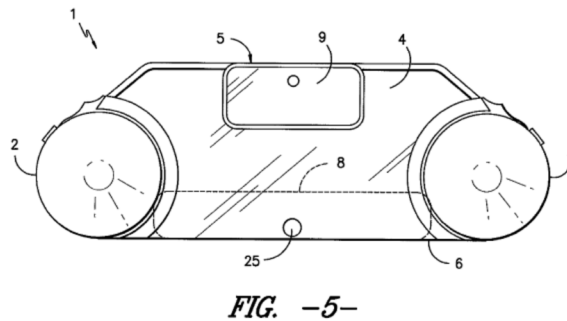
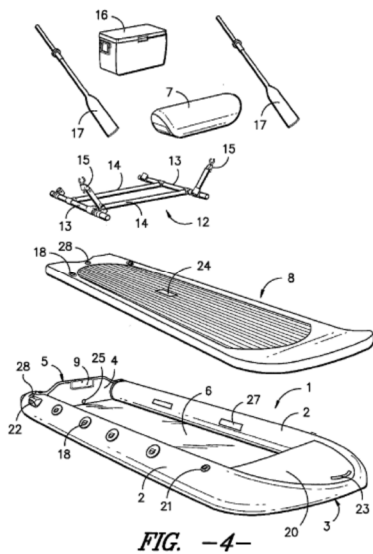


(Ex. 1009 at FIGS. 1-5.)

126. While Hoge does not expressly disclose that the inflatable floor 12 can be used as a stand-up board, Hoge discloses that its floor chamber 12 is inflated to a pressure of 15 psi, which is in the range of desired pressures for inflatable drop stitched stand-up paddle boards (“Inflatable stand up paddleboards are made of drop stitched material allowing them to be inflated to very high pressures, generally in the range of 12 psi to 15 psi.” (Ex. 1012 at [0005].) Swan, (Ex. 1010 at [0004]), also discloses such drop-stitch inflatable chambers are well suited for stand-up paddle boards. For at least these reasons, it would be at least obvious that Hoge’s inflatable floor 12 is a stand-up board chamber.

127. It would also be obvious, if necessary, to incorporate the stand-up board chamber (paddleboard 8) of Swan in place of the inflatable stand-up board chambers

of Hoffmann or Hoge because Swan discloses that its paddleboard 8 creates a buoyant, stable boat with a firm floor allowing two adults to stand up and cast fishing lines from the boat. (Ex. 1010 at [0035].) Incorporating Swan's paddleboard 8 in place of the floors of Hoffmann or Hoge would be a routine implementation for a POSITA, rendering predictable results. Swan discloses a stand-up paddle board chamber (paddleboard 8) forming a stand-up paddle board combined with side rails (side tubes 2). Swan also discloses that drop-stitched inflatable chambers, such as disclosed by Hoge, are well suited for stand-up paddle boards. **"Inflatable stand up paddleboards have been in use for several years and are constructed by making an inflatable drop stitch (DS) air-tight envelope** of PVC impregnated polyester fabric or other coated or impregnated fabric into the shape of a conventional paddleboard that can be inflated through a valve. **This drop stitch manufacturing creates a board that may be inflated to very high pressures, resulting in rigidity similar to a hard board.** Some benefits of inflatable boards over hard boards are their durability and transportability." (Ex. 1010 at [0004].) **"A removable, inflatable paddleboard 8 preferably 6 inches thick sits just above the bottom member 6 and inside the boat 1.** The combination of the inflated boat 1 and the inflated paddleboard 8 creates a buoyant, stable boat with a firm floor allowing two adults to stand up and cast fishing lines from the boat 1." (*Id.* at [0035].)



(Ex. 1010 at FIGS. 4, 5.)

128. Scadden also discloses an inflatable paddle-craft with a first stand-up board chamber (platform 30). “Boat 20 further includes an **inflatable platform 30** that extends between the spaced apart inflatable pontoons 24 and 26, intermediate the lengths of the pontoons and adjacent the transom 28 at the stern of the boat. The pontoons 24 and 26, transom 28 and platform 30 are all made from durable flexible materials, such as reinforced neoprene rubber, that can inflate to the required shapes.” (Ex. 1011 at 4:20-26.) “A seat 72 having a rigid flat base 74 rests on a **leading edge of platform 30**. With seat back 82 flat against the seat base 74, the rear surface 84 of the seat back becomes a **standing platform** on which a boat user can stand while fishing, or the like.” (Ex. 1011 at 5:22-31.)

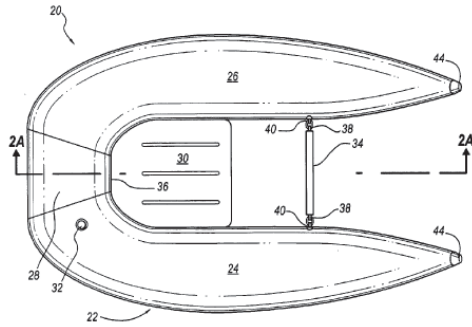


FIG. 2

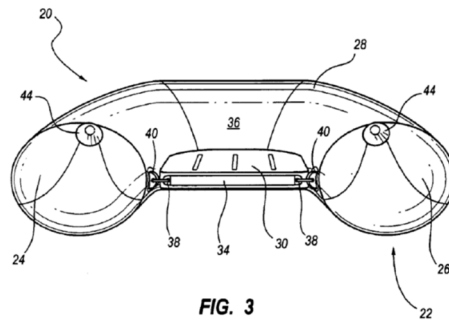


FIG. 3

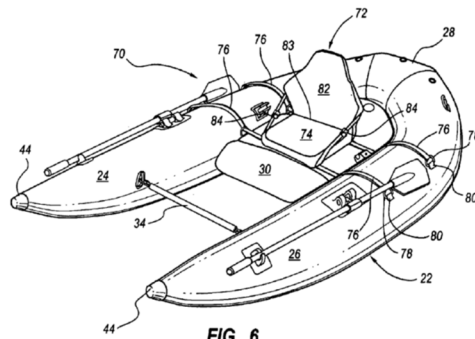


FIG. 6

(Ex. 1011, FIGS. 2, 3 & 6.)

129. Airhead SS discloses a first inflatable chamber (main chamber) forming a stand-up board. “Whereas most inflatable SUP’s have only one main chamber, this one has three ... One for the main body and one on each side chamber. The main body can be inflated up to 15 PSI.” (Ex. 1021 at 4.)

Airhead SS Camouflage ISUP Review



This is one of the most stable inflatable SUP boards on the market.

It is wide, it is strong and it is ideal for any person who would like a little extra stability while out on the water.

Specs For The Airhead SS Camouflage

- 10'8" long
- 38" wide
- weighs 32 lbs.
- can hold up to 300 lbs.
- air pressure: main chamber 15 PSI, side chambers 7-9 PSI
- includes two small side skegs, one large removable skeg

Material: Extra rugged drop stitch PVC construction

Main Chamber
overhang of
Side Chambers

Main Chamber
overhang of
Side Chambers



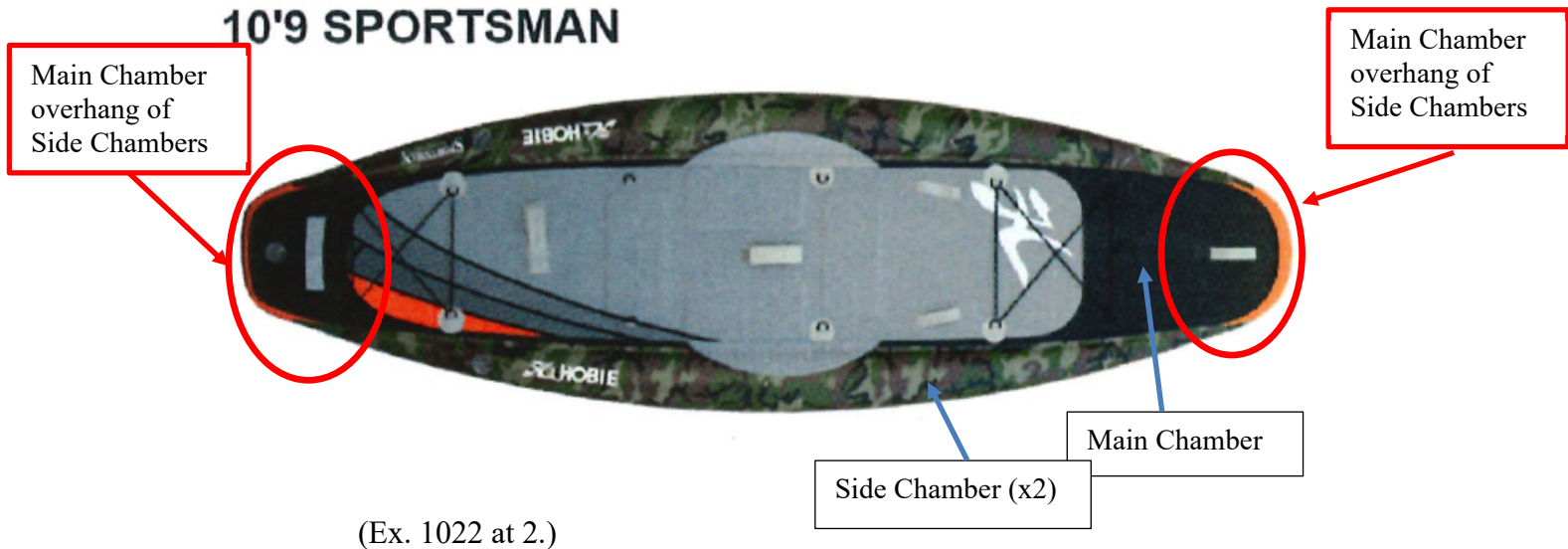
(Ex. 1021 at 2-3.)

Side Chamber (x2)

Main Chamber

130. Hobie iSeries includes a photograph informing a POSITA that the Stand Up Paddleboard includes a first main inflatable chamber (middle paddleboard chamber) and a pair of inflatable side chambers, similar to the Airhead SS. By viewing the photograph, I can see a fill valve on the rear end of the main chamber and a fill valve on the left chamber.

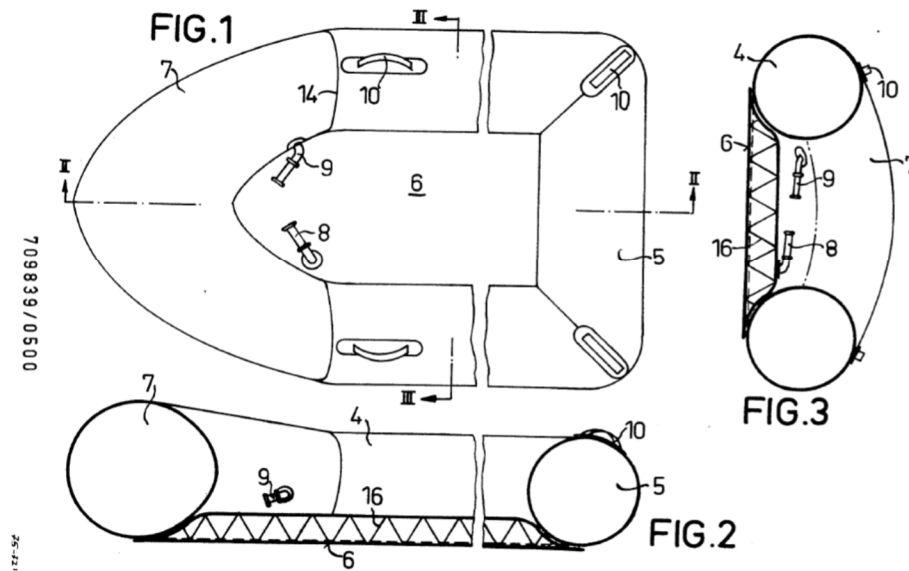
10'9" SPORTSMAN



- C. **“a second inflatable chamber connected to the first inflatable chamber to form a curve-shaped front hull.” (Claim 1.b);**
“an upper inflatable chamber connected to the lower inflatable chamber, the upper inflatable chamber forming a rail around at least a portion of the lower inflatable chamber, and the combination of the lower and upper inflatable chambers forming a curve-shaped front hull” (Claim 15.b);
“connecting an upper inflatable chamber to the lower inflatable chamber to form a rail around at least a portion of the lower inflatable chamber. (Claim 18.b);
“a second inflatable chamber connected to the first inflatable chamber to form a curved-shaped front hull (Claim 19.b);
“a second inflatable chamber connected to the first inflatable chamber to form a curve-shaped front hull. (Claim 20.b);
“wherein the second inflatable chamber has sidewalls to form a rail around at least a portion of the first inflatable chamber. (Claim 10).

131. Hoffmann discloses a second/upper inflatable chamber (inflatable gunwale tubes 4 & 7) connected to the first/lower inflatable chamber (inflatable floor 6), where the second/upper inflatable chamber (inflatable gunwale tubes) form a rail around at least a portion of the first/lower inflatable chamber (inflatable floor 6), and the combination of the lower and upper inflatable chambers form a curve-shaped front hull (the combination of the inflatable floor 6 and gunwale tubes 7 form the curve-shaped front hull). Hoffmann’s gunwale tubes 4 & 7 form a rail around the first/lower inflatable chamber (inflatable floor 6). Hoffmann’s gunwale tubes 4 & 7 have sidewalls that form a rail around the first/lower inflatable chamber (inflatable floor 6). “The invention relates to inflatable boats with two parallel side tubes that converge in a truncated bow tip ... and a flat floor that connects them.” (Ex. 1007,

[0001].) “The specific coordination of the **side gunwale tubes** with the basic dimensions of the boat body and their all-round connection with the insertion of a stern side transverse tube ... result in ... fully inflated boat with a relatively large usable interior area...” (*Id.* at [0004].) “As a result of the consistently flat course of the floor surface in all parts, the conical thickening of the curved tube pieces continuing from the side tubes that increases towards the front, leads to a bulge-like elevation of the bow tip in relation to the water surface. In comparison to the frequently used bending down of the bow section, this design of the tubes **results in a larger contact surface, higher buoyancy and improved floating stability.**” (*Id.* at [0006].) “The inflatable boat depicted is constructed from **two straight extending side tubes 4** ... and a continuous floor 6. **The side tubes 4 continue towards the front via curved pieces 7 into the bow section, where they converge in a truncated bow tip.** The curved pieces 7 widen on one side upwards to up to 1.5 times the original side tube diameter in the area of the bow tip. This creates a comparatively spacious, highly resilient inflatable boat with a bulbous bow and a basic shape that can be described as a compromise between a teardrop and a pontoon shape.” (*Id.* at [0009]); “The **floor 6** is made of a so-called spacer fabric with connecting threads 16 woven between two outer fabric plies and **is glued to the gunwale tubes 4, 5, 7 over its entire circumference. A similar filling valve with a tube connector 9 ...for inflating the gunwale tubes.**” (*Id.* at [0010].)



(Ex. 1006 at FIGS. 1-3.)

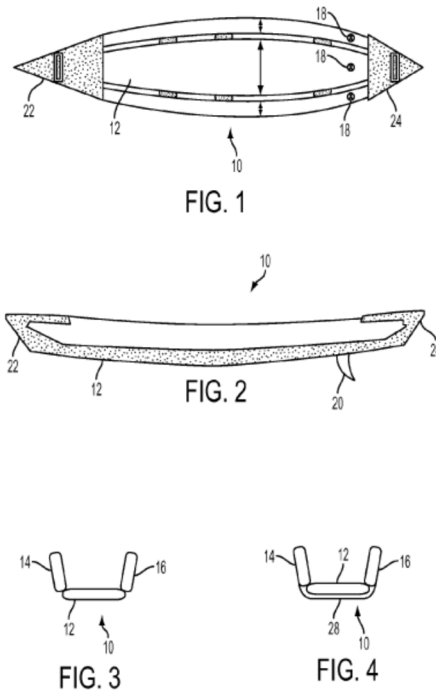
132. Figs. 2 and 3 of Hoffmann illustrate the positioning of the side tubes 4 onto the bottom chamber 6 as well as a partial overhang of the side tubes 4 over the chamber 6. Figs. 1-3 of Hoffmann are reliable to a POSITA for illustrating this stacking and overhanging relationship between the side tubes 4 and the bottom chamber 6 because Hoffmann specifically describes the drawings of Figs. 1-3 as “schematically” showing an exemplary embodiment (“schematically” means that the drawings show the main form or features of the boat). (Ex. 1007 at [0008].) Additionally, Hoffmann describes Fig. 1 as “a plan view of an inflatable boat in an inflated state ready for use,” Fig. 2 as “a sectional view along line II-II” and Fig. 3 as “a sectional view along line III-III in Fig. 1.” (*Id.*) These statements further reflect that Hoffmann intended that Figs. 1-3 to be representative of an actual inflatable boat “ready for use” and not merely a conceptual or abstract representation. Additionally,

Figs. 1-3 are consistent with the structural and positional descriptions of the construction of the boat as set forth throughout and explicitly in paragraphs [0003], [0006], [0007], [0009] and [0010] and the claims. Finally, Hoffmann expressly discloses which components are not shown in detail, “[t]he inflatable boat can be provided with carrying straps 10 in the bow and stern areas and with other equipment parts that are not shown in more detail for the sake of clarity, such as rowlocks, motor mounts, mooring keys, and the like.” (*Id.* at [0012].) As such, a POSITA would expect that the components and equipment that are shown in the figures, such as the inflatable side tubes 4, 7 and the inflatable floor 6, are shown in detail for clarity. Finally, the Figures are consistent with each other with respect to the stacked and overhanging relationships.

133. It would be obvious to incorporate Hoffmann’s upper/lower (i.e., stacked) relationship between the sidewalls and the stand-up board chamber 6 of Hoge and/or Swan. The tapered (on the cross-section) shape of the stand-up board chamber 6 of Hoffmann interfaces with the curved side tubes 4. This interface between the two components in Hoffmann provides greater surface area in the connection between the stand-up board chamber 6 and the side tubes, resulting in a more secure glued connection. This increased surface area feature improves the integrity of the glued connection. Likewise, modifying Hoge in such a way would

be a routine implementation for a POSITA requiring moderate redesign of Hoge (as informed by Hoffmann), rendering predictable results.

134. Hoge also discloses a second/upper inflatable chamber (inflatable sides 14, 16) that is stacked on the first/lower inflatable chamber 12 as shown in Fig. 3 and connected to the first/lower inflatable chamber using, for example, glue or welds. The second/upper inflatable chamber 14/16 forms a rail around the lower inflatable chamber 12. The second/upper inflatable chamber 14/16 forms sidewalls that form a rail around the lower inflatable chamber 12. The combination of the first/lower and second/upper inflatable chambers form at least a portion of the front hull (bow). **“Glued or welded directly to the inflatable floor 12 are inflatable sides 14, 16** which are also made of high-pressure drop stitch material formed at port and starboard sides of the inflatable floor 12, respectively. The use of drop stitch material in the inflatable sides 14, 16 allows the inflatable sides 14, 16 to be inflated to a pressure of 10 psi, 15 psi or even greater psi.” (*Id.* at [0031]); “inflatable sides made of high-pressure drop stitch material formed at port and starboard sides of the inflatable floor, respectively” (*Id.* at Claim 1.)



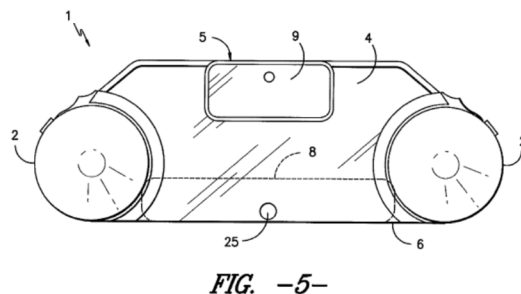
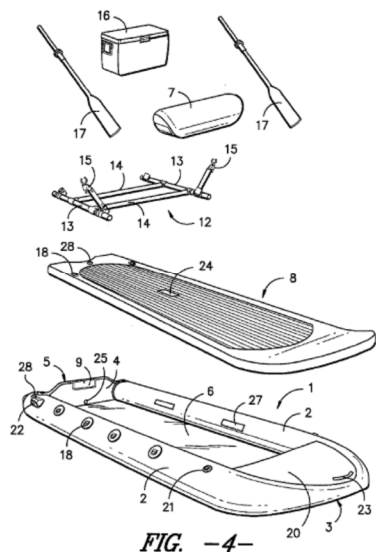
(Ex. 1009 at FIGS. 1-4.)

135. Swan also discloses a second/upper inflatable chamber (side tubes 2) connected (e.g., by friction fit or hook/loop connections known as Velcro) to the first/lower inflatable chamber 8. The second/upper inflatable chamber 2 forms a rail around the first/lower inflatable chamber 8. The combination of the first/lower inflatable chamber 8 and second/upper inflatable chamber forms a curve-shaped front hull (bow 3). Swan's side tubes 2 also form a rail around the first/lower inflatable chamber 8; and Swan's side tubes 2 have side walls that form a rail around the first/lower inflatable chamber 8. "Inflatable boats have been in use for decades. A common design includes **two parallel side tubes that curve together in the front forming a bow.**" (Ex. 1010 at [0002].) "In one embodiment, **the sides of an inflatable boat 1 are defined by two elongated tubes 2** preferably about 12.5 feet

long, forming a boat about 4 feet wide. **The two side tubes 2 come together in the front to form a bow 3** and may further **curve up near the bow 3** about 12 inches to help prevent waves from breaking over the bow 3 and into the boat 1 when underway. The two side tubes 2, preferably about 11 inches in diameter, connect to a transom 4 on the stern end.” (*Id.* at [0027]); “The paddleboard 8 may be shaped to contact the inside edges of the side tubes 2 and transom 4 of the boat 1, preferably tapered and rounded on the bow end giving the paddleboard 8 a typical bow shape, while being squared off on the stern end to fit against the transom 4.” (*Id.* at [0036].) “In an alternative embodiment of the invention, the **paddleboard 8 and side tubes 2 may be connected more securely through an attachment device such as hook and loop strips⁴ 27**, straps or another similar connecting device. Hook and loop strips 27 may be affixed to the side tubes 2, subsequently passing through loops affixed to the sides of the paddleboard 8, and then reattaching to the hook and loop strips 27 on the side tubes 2. Similarly, hook strips 27 may be affixed to the side tubes 2 and positioned to attach to loop strips 27 that may be affixed to the sides of the paddleboard 8.” (*Id.* at [0038].) “An inflatable boat comprising: A pair of elongated, inflatable tubes forming the sides of a boat, having a first end and a second end; **said tubes connected to each another at said first end, forming a bow... an inflatable paddleboard that may be removably positioned between said tubes**

⁴ “hook and loop strips” are commonly called by the product name “VELCRO®”

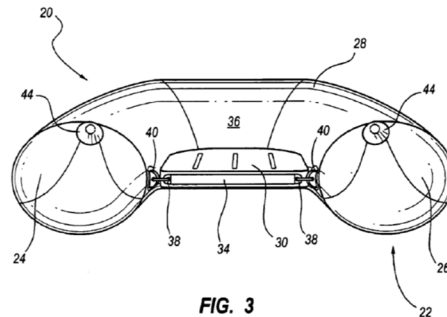
and on top of said bottom member for the purpose of creating buoyancy and **forming a firm floor, said paddleboard having a bow end...** The inflatable boat of claim 1, wherein **said bow includes an arcuate curve.**" (*Id.*, Claims 1 and 2)



(Ex. 1010 at FIGS. 4, 5.)

136. Scadden discloses connecting second inflatable side chambers (pontoons 24 and 26) to the first stand-up board chamber (inflatable platform 30). Scadden's pontoons 24, 26 also provide a rail around the inflatable platform 30, where the rail is formed by sidewalls of the pontoons 24, 26. "In the illustrated preferred embodiments of FIGS. 1-4, the very lightweight float boat of the invention, shown generally at 20 includes a unitary twin pontoon hull 22 comprising a pair of spaced apart parallel extending inflatable pontoons 24 and 26. Boat 20 further includes an inflatable platform 30 that extends between the spaced apart inflatable pontoons 24 and 26. Preferably the pontoons and transom and the platform are

interconnected to be air filled through a single conventional air valve 32....”
(Ex. 1011 at 4:14-31.)



(Ex. 1011 at FIG. 3.)

137. Airhead SS also discloses a second inflatable chamber (“side chambers”) connected to the first inflatable chamber (main chamber). The side chambers of Airhead SS form a rail along the sides of the main chamber. “What makes this SUP unique and extra stable is the inflatable side chambers... The side chambers can be inflated up to 9 PSI. The side chambers make this board extra wide. They create extra buoyancy and stability.” (Ex. 1021 at 4.)



Airhead Super Stable Performance

The performance was decent. This is not a streamlined SUP that is going to race through the water.

However considering it's size I thought it paddled nicely, tracked well and had no problem cutting through choppy waves.

In fact I found it so stable that I noticed the waves made much less of an impact on my paddling than normal.

I felt secure on this board and it was fun to ride. My little dog Seth was also totally comfortable and he seemed at ease even walking on the board while I paddled.

(Ex. 1021 at 6.)

Airhead SS Camouflage ISUP Review



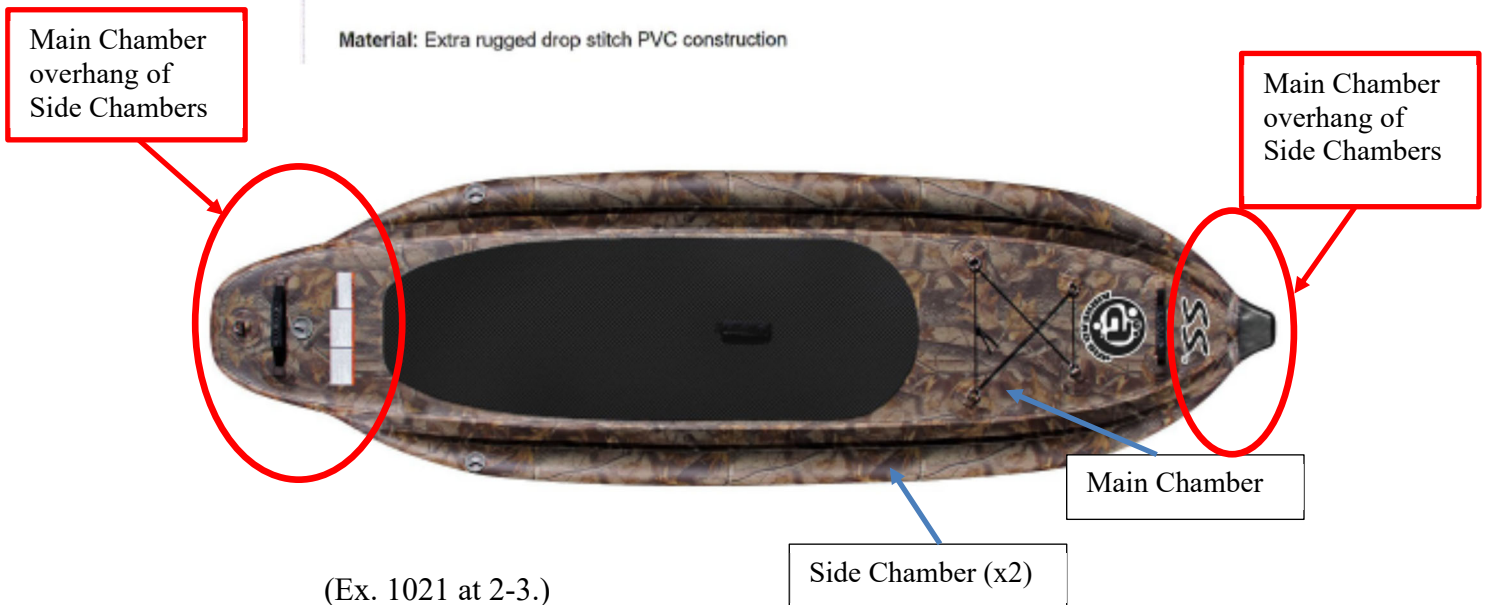
This is one of the most stable inflatable SUP boards on the market.

It is wide, it is strong and it is ideal for any person who would like a little extra stability while out on the water.

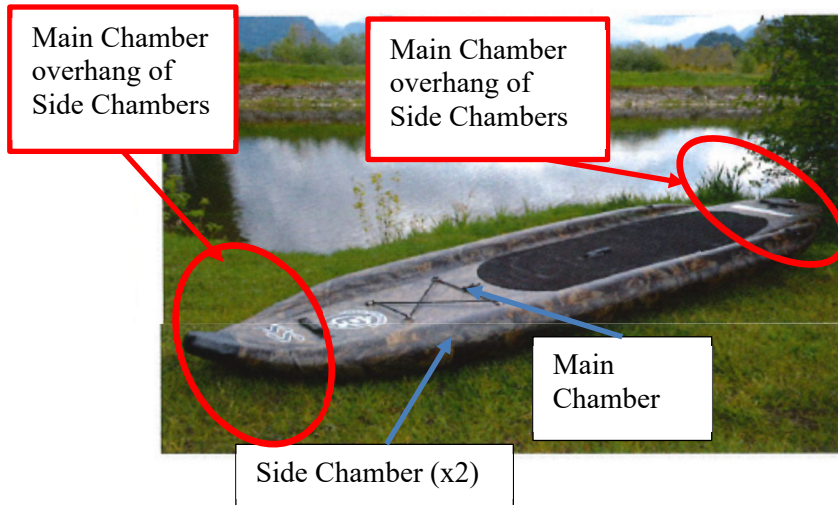
Specs For The Airhead SS Camouflage

- 10'8" long
- 38" wide
- weighs 32 lbs.
- can hold up to 300 lbs.
- air pressure: main chamber 15 PSI, side chambers 7-9 PSI
- includes two small side skegs, one large removable skeg

Material: Extra rugged drop stitch PVC construction



Airhead SS Inflatable Side Chambers



What makes this SUP unique and extra stable is the inflatable side chambers.

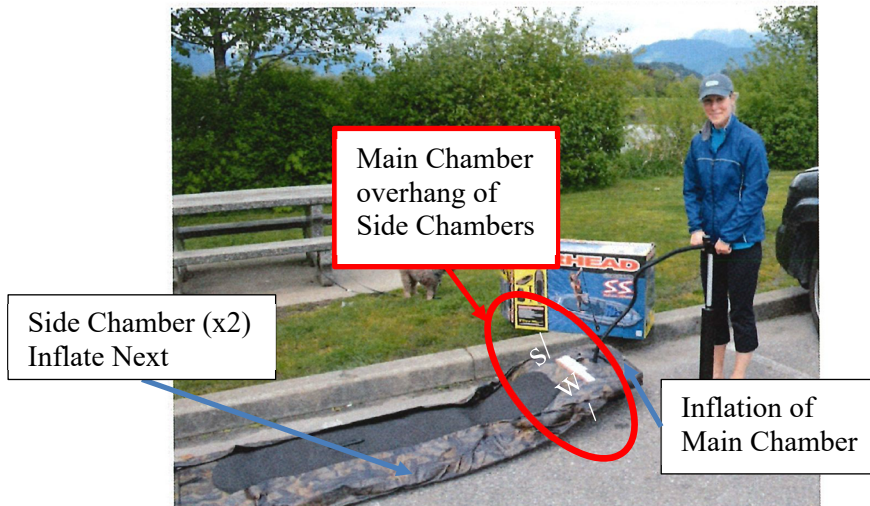
Whereas most inflatable SUP's have only one main air chamber, this one has three...One for the main body and one on each side chamber.

The main body can be inflated up to 15 PSI. The side chambers can be inflated up to 9 PSI.

The side chambers make this board extra wide. They create extra buoyancy and stability.

(Ex. 1021 at 3, 4.)

Once you have the SUP out of the bag, unroll and inflate. Inflate the main chamber first then the two side chambers.

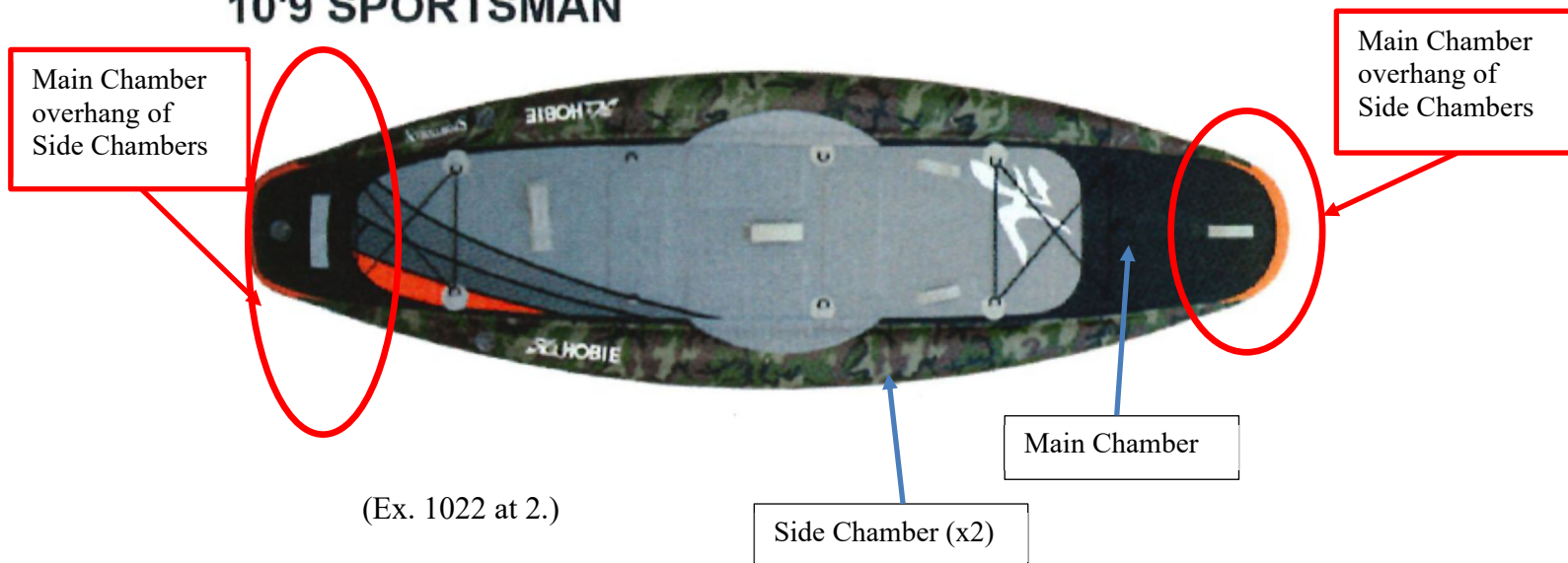


I used the hand pump that comes with this Airhead board. It worked fine... takes some effort to get to 15 PSI but very doable. The two side chambers inflated very fast.

(Ex. 1021 at 5.)

138. Hobie iSeries includes a photograph informing a POSITA that the Stand Up Paddleboard includes a first main inflatable chamber (middle paddleboard chamber) and a pair of inflatable side chambers, similar to the Airhead SS. The side chambers form a rail along the sides of the main chamber. By viewing the photograph, I can see a fill valve on the rear end of the main chamber and a fill valve on the left chamber.

10'9" SPORTSMAN

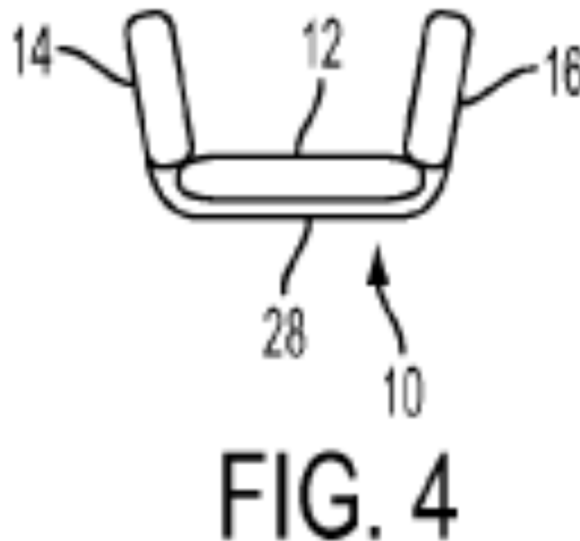


(Ex. 1022 at 2.)

- D.** “a tent covering between the lower inflatable chamber and the upper inflatable chamber.” (Claim 15.c);
 “providing a tent covering between the first inflatable chamber and the second inflatable chamber to form a curve-shaped front hull.” (Claim 18.c);
 “a tent covering between the first inflatable chamber and the second inflatable chamber.” (Claim 20.c);
 “a tent covering between the first inflatable chamber and the second inflatable chamber.” (Claim 13).

139. Hoge discloses a tent covering (fabric floor 28) between the first/lower stand-up board chamber 12 and the second/upper sidewall chamber 14/16. “... as

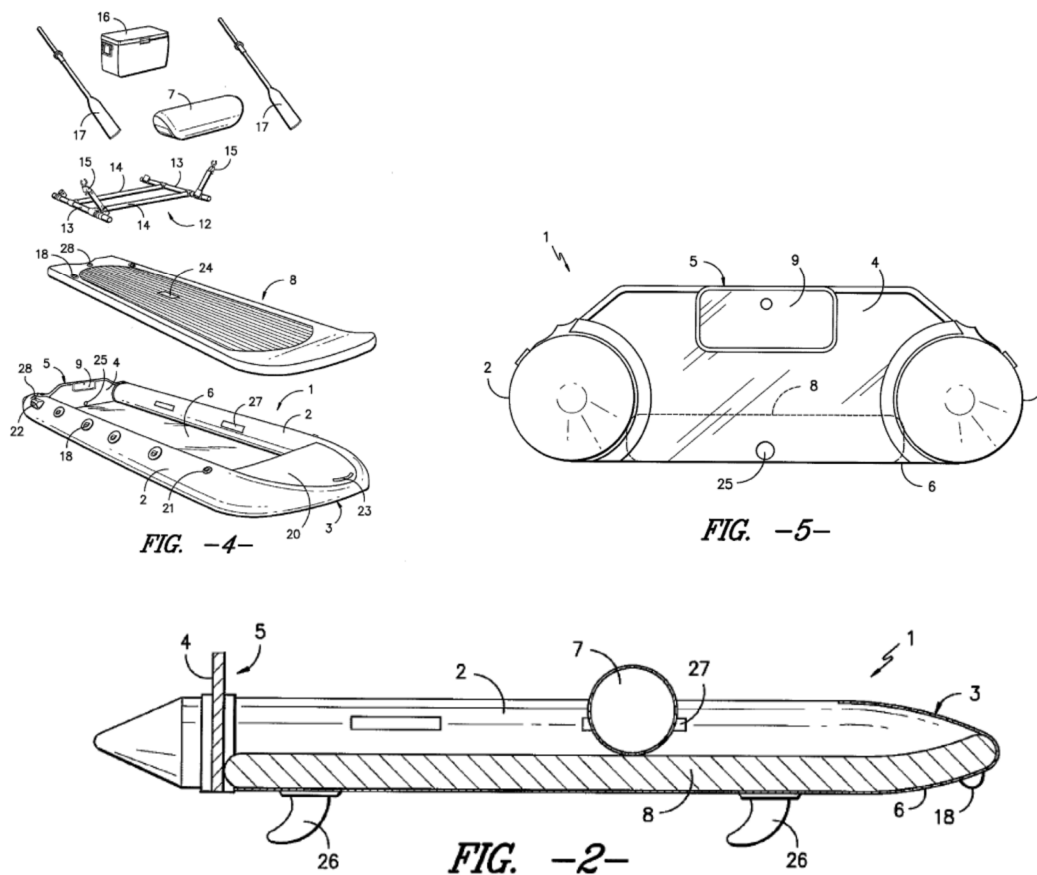
shown in FIG. 4, the inflatable sides 14, 16 may be glued or welded to a non-inflated fabric floor 28 and the inflatable floor 12 made of high pressure drop stitch material may be positioned and attached to a top of the non-inflated fabric floor 28 with the inflatable sides 14, 16 pressing against the inflatable floor 12 made of high pressure drop stitch material.” (*Id.* at [0032].)



(Ex. 1009 at FIG. 4.)

140. It would be obvious to add Hoge’s tent covering (fabric floor 28) to Hoffmann to provide a layer of protective tenting to the bottom surfaces of the inflatable bottom and inflatable side tubes 4 and curved pieces 7 of Hoffmann to protect against punctures in such inflatable chambers. Likewise, modifying Hoffmann in such a way would be a routine implementation for a POSITA requiring merely adding an additional protective fabric floor (as informed by Hoge), rendering predictable results.

141. Swan also discloses a tent covering (plastic, rubber or latex bottom member 6), like Hoge's fabric floor 28, stretched between the first/lower inflatable chamber 8 chamber and the second/upper inflatable chamber 2. Swan also discloses another tent covering (bow cover 20) between the first/lower inflatable chamber 8 and the second/upper inflatable chamber 2. "A plastic or **rubber bottom member 6** is **attached with a watertight seal at the bottom of the side tubes 2** from the tip of the bow 3 to the bottom of the transom 4 to form the bottom of a watertight vessel or boat." (Ex. 1010 at [0027].) "[A] bottom member attached in a water tight manner to said tubes and said transom, **said bottom member extending from said bow to said stern**, forming a substantially watertight bottom; ... **said bottom member is constructed from material selected from the group consisting of plastic, rubber, and latex.**" (*Id.* at Claims 1, 3.) "A bow cover 20 may extend back from the bow 3 about 24 inches, thus creating a storage area that allows stowage of rain coats shoes and other gear." (*Id.* at [0032].) Swan's tent covering (bottom member 6), provided between the first/lower and second/upper inflatable chambers (side tubes 2 and paddleboard 8), forms the curve-shaped front hull of the boat 1 (see especially Fig. 2 of Swan, which shows the tent covering 6 extending from the bottom curving up all the way around the front hull to form a bow).

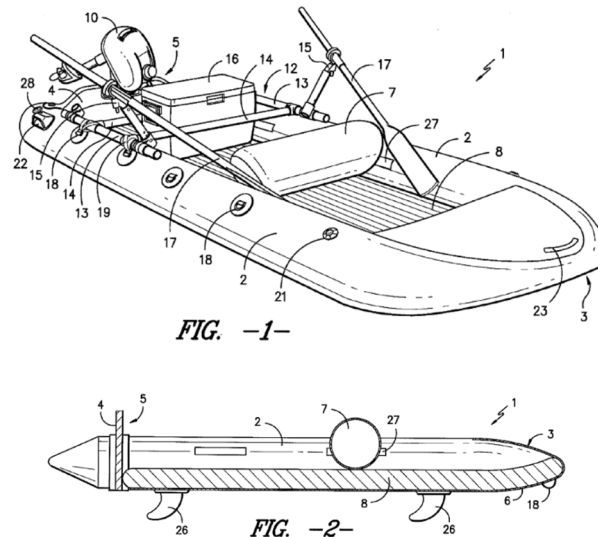


(Ex. 1010 at FIGS. 2, 4, 5.)

142. It would be obvious to add Swan's tent covering (bottom member 6) to Hoffmann to provide a layer of protective tenting to the bottom surfaces of the inflatable bottom and inflatable side tubes 4 and curved pieces 7 of Hoffmann to protect against punctures in such inflatable chambers. Likewise, modifying Hoffmann in such a way would be a routine implementation for a POSITA requiring merely adding an additional protective floor (as informed by Swan), rendering predictable results. It would also be obvious to add the bow cover 20 tent covering of Swan to Hoffmann and/or to Hoge to provide a storage area with Hoffmann's

and/or Hoge's paddle-craft. Likewise, incorporating such a bow cover 20 into Hoffmann and/or Hoge would be a routine implementation for a POSITA requiring only the addition of an additional bow cover component to Hoge, rendering predictable results.

143. Additionally, Swan discloses another tent covering in the form of the inflatable thwart 7 that is connected between the first and second inflatable chambers by hook/loop fasteners 27. "An inflatable, removable thwart 7 may be used to provide a seat near the bow 3. It may be held in place by hook and loop tape 27, for instance, which connects it to the inside of each side tube 2." (Ex. 1010 at [0027].)

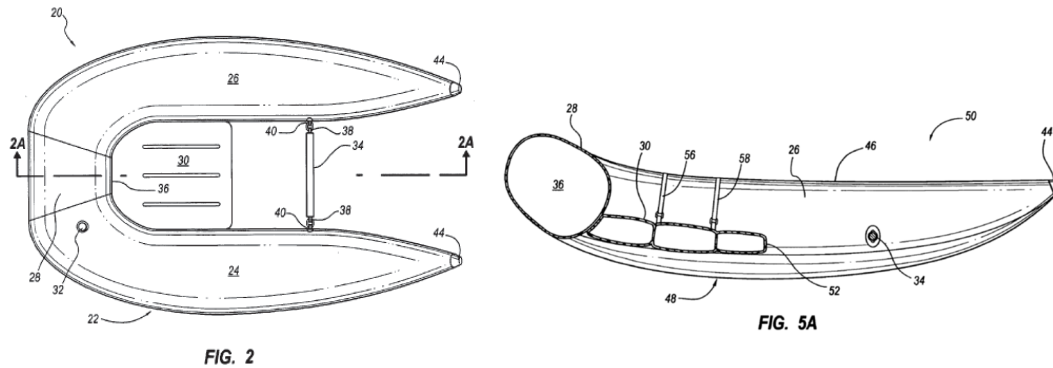


(Ex. 1010 at FIGS. 1, 2.)

144. It would be obvious to incorporate the inflatable thwart 7 tent covering of Swan into the paddle-craft of Hoffmann and/or Hoge to provide additional seating in Hoffmann's and/or Hoge's watercraft. Likewise, incorporating such a thwart 7 into Hoffmann and/or Hoge would be a routine implementation for a POSITA

requiring only the addition of an additional seating component to Hoffmann and/or Hoge, and rendering predictable results.

145. Scadden also discloses a tent covering (transom 28) between the first inflatable chamber (platform 30) and the second inflatable chamber (pontoons 24/26) to form a rounded rear hull of the water craft. “In the illustrated preferred embodiments of FIGS. 1-4, the very lightweight float boat of the invention, shown generally at 20 includes a unitary twin pontoon hull 22 comprising a pair of spaced apart parallel extending inflatable pontoons 24 and 26, **interconnected at one end by an inflatable transom 28.**” (Ex. 1011 at 4:14-19); **“Inflatable transom 28 extends between and connects the pontoons 24 and 26 at the stern of the boat and has a bottom surface 48 that continues the upward curves of the pontoons to be above the top surfaces of the pontoons. The transom provides a generally U-shaped configuration to the stern.** The very lightweight float boat 50 shown in FIG. 5, of the patent includes the unitary twin pontoon hull 22, with spaced apart parallel inflatable pontoons 24 and 26 interconnected by the inflatable transom 28.” (*Id.* at 5:3-19.)



(Ex. 1011 at FIGS. 2, 5A.)

146. It would be obvious to connect the front of the pontoons 24/26 with a similar transom 28 to form a front hull. Joining these two components provides a unitary structure or hull. It would also be obvious to use this transom 28 as an inflatable bow between the inflatable sides 14/16 of Hoge, for example in place of the rigid bow mold 22 of Hoge, as an inflatable transom 28 would take up less space when deflated than the rigid bow mold 22 of Hoge. Deflation allows for a much more compact configuration for transport. Likewise, incorporating this transom 28 as an inflatable bow into Hoge would be a routine implementation for a POSITA requiring moderate redesign of Hoge, rendering predictable results. For the same reasons, it would be obvious to replace the rigid bow mold 22 of Hoge with the inflatable bow tenting 7 of Hoffmann to provide a more rounded bow, a more spacious interior and provide another component that could be deflated, packed and transported more easily; rendering predictable results.

147. In my opinion, Airhead SS also includes a tenting material (camouflage material shown in the photographs) that encases the main and side chambers to give

the entire structure a paddle board shape and associated rigidity when inflated. “I am very pleased with the rigidity of the Airhead CC Camouflage and I noticed right away the strength of the material.” (Ex. 1021 at 3.)

**E. “wherein the tent forms a separate inflatable air chamber”
(Claim 14);
“wherein the tent forms a separate inflatable air chamber”
(Claim 16).**

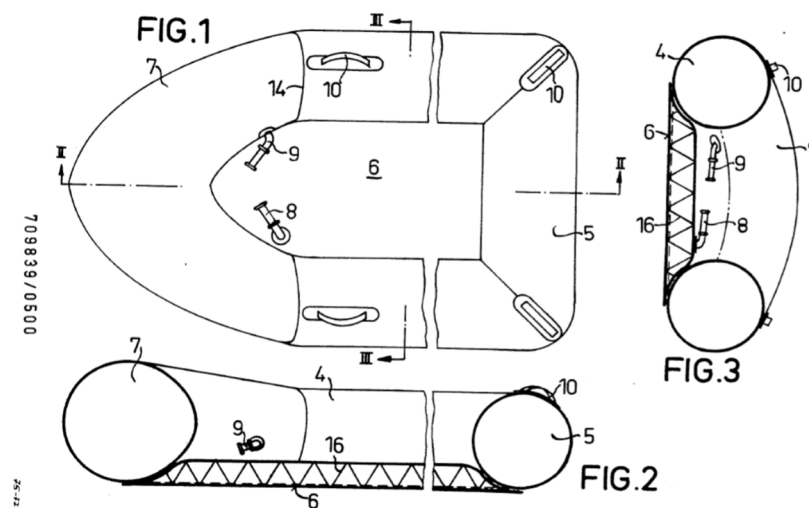
148. As shown and discussed in paragraph 143, Swan’s thwart 7 tent covering is a separate inflatable air chamber (separately inflatable from both the upper inflatable chamber 2 and the lower stand-up board chamber 8).

149. As shown and discussed above in paragraph 145, the tent (transom 28) of Scadden also forms a separate inflatable air chamber.

150. If needed, it would be further obvious to replace the curved pieces 7 of Hoffmann with a separate inflatable air chamber tent (transom 28) as disclosed by Scadden because Scadden’s separably inflatable transom advantageously provides a generally U-shaped configuration to the hull. (Ex. 1011 at 5:3-19.) Likewise, incorporating this inflatable transom 28 as an inflatable bow of Hoffmann would be a routine implementation for a POSITA requiring minor redesign of Hoffmann, rendering predictable results.

F. “wherein the rail is formed around a front and front-side portion of the lower inflatable chamber.” (Claim 17).

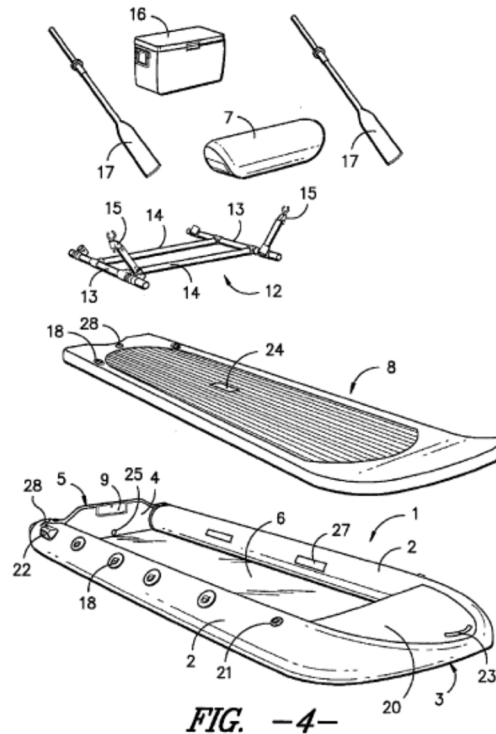
151. As shown and discussed in paragraphs 131-132, Hoffmann discloses that the inflatable side tubes 4 continue to curved pieces 7 comprise a rail formed around a front and front-side portion of the lower stand-up inflatable board chamber (inflatable floor 6). The curved pieces 7 in combination with the inflatable bottom form a front hull of the watercraft. Note that Fig. 3 shows the curved pieces connected between both the side tubes 4 and the floor 6.



(Ex. 1006 at FIGS. 1-3.)

152. Additionally, Swan’s rail (tubes 2) is formed around a front and front-side portion of the lower stand-up board chamber (paddleboard 8). “In one embodiment, **the sides of an inflatable boat 1 are defined by two elongated tubes 2** preferably about 12.5 feet long, forming a boat about 4 feet wide. **The two side tubes 2 come together in the front to form a bow 3** and may further curve

up near the bow 3 about 12 inches to help prevent waves from breaking over the bow 3 and into the boat 1 when underway....” (Ex. 1010 at [0027].)

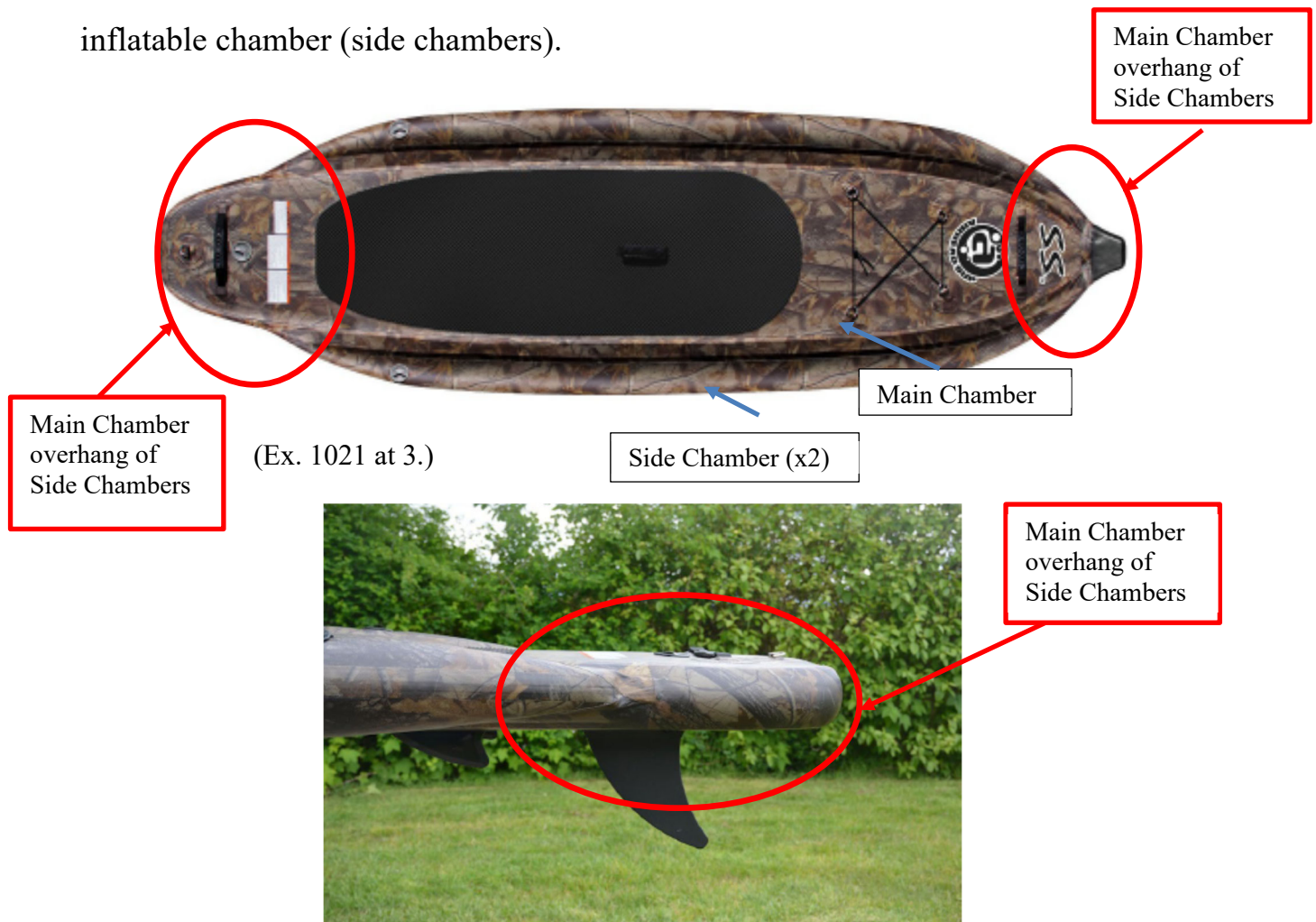


(Ex. 1010 at FIG. 4.)

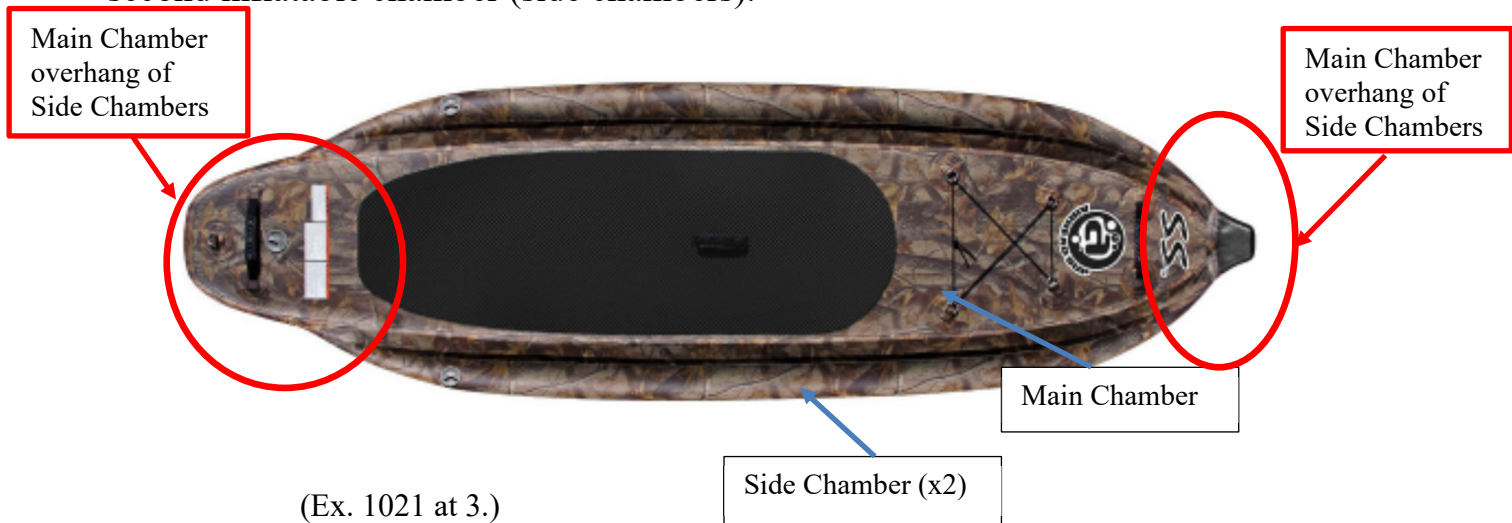
153. It would be further obvious to modify the rail (tubes 4 and curved pieces 7) of Hoffmann to be shaped and dimensioned as the side tubes 2 of Swan to provide a paddle-craft that helps prevent waves from breaking over the bow of the craft when underway. Likewise, modifying Hoffmann in such a way would be a routine implementation for a POSITA requiring only moderate redesign of Hoffmann's bow (as informed by Swan), rendering predictable results.

- G. “wherein the first inflatable chamber at least partially overhangs the second inflatable chamber” (Claim 1.c);
“wherein the first inflatable chamber overhangs a front portion of the second inflatable chamber” (Claim 4);
“wherein the first inflatable chamber overhangs a rear portion of the second inflatable chamber” (Claim 5);
“wherein the first inflatable chamber overhangs both a front and a rear portion of the second inflatable chamber” (Claim 6).

154. Airhead SS includes photographs informing a POSITA that the first inflatable chamber (main chamber) overhangs at least the back end of second inflatable chamber (side chambers).



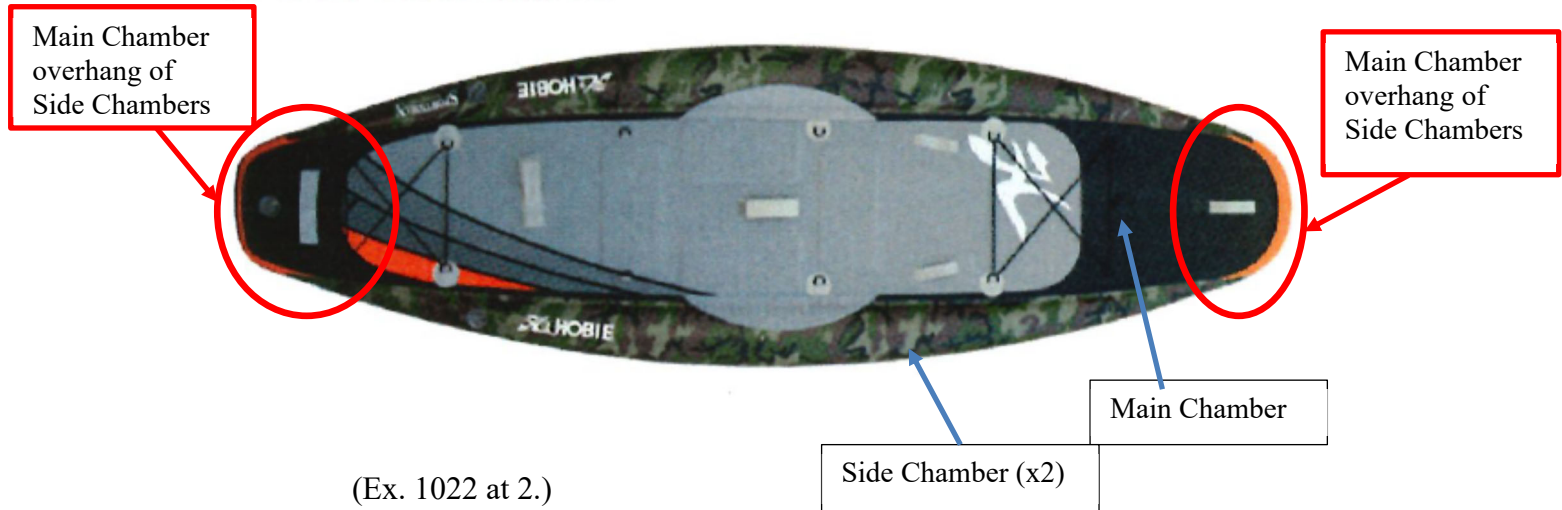
155. Airhead SS includes photographs informing a POSITA that the first inflatable chamber (main chamber) also at least partially overhangs the front end of second inflatable chamber (side chambers).



(Ex. 1021 at 7.)

156. Hobie iSeries also includes a photograph that, in my opinion, informs a POSITA that the first inflatable chamber (middle paddleboard chamber) at least partially overhangs the both the front and rear ends of second inflatable chamber (side chambers).

10'9 SPORTSMAN



157. It would be obvious to modify Hoffmann so that Hoffmann's first inflatable chamber (inflatable floor 6) overhangs front and/or rear the second inflatable chamber (gunwale tubes 4, 7) as taught by Airhead SS and/or Hobie SS. The extended (over-hanging) main chamber provides increased performance as a stand-up paddle board that "paddled nicely, tracked well and had no problem cutting through choppy waves." (Ex. 1021 at 6.) Extending Hoffmann's first inflatable chamber so that it is longer (and so that it overhangs forward and rearward) would increase Hoffmann's speed when being paddled. "The most common boards are 10-12 feet long... Racing boards are narrower and range from 12-feet, 6-inches to 18 feet in length..." (Ex. 1014 at 14.) Additionally extending Hoffmann's first inflatable chamber (inflatable floor 6) rearward so that it overhangs the second inflatable chamber (gunwale tubes 4, 7) as informed by Airhead SS and/or Hobie iSeries would be a routine implementation for a POSITA (possibly requiring

removal of Hoffmann's stern tube 5), rendering predictable results. Additionally extending Hoffmann's first inflatable chamber (inflatable floor 6) forward so that it overhangs the second inflatable chamber (gunwale tubes 4, 7) as informed by Airhead SS and/or Hobie iSeries would be a routine implementation for a POSITA (possibly requiring removal of Hoffmann's bow tubes 7), rendering predictable results.

H. “the first and second inflatable chambers are interconnected with only one fill valve” (Claim 1.d).

158. Scadden discloses that its first and second chambers (platform 30 and pontoons 24, 26) are interconnected with only a single fill valve 32. “The pontoons 24 and 26, transom 28 and platform 30 are all made from durable flexible materials, such as reinforced neoprene rubber, that can inflate to the required shapes. **Preferably the pontoons and transom and the platform are interconnected to be air filled through a single conventional air valve 32.**” (Ex. 1011, 4:26-28.)

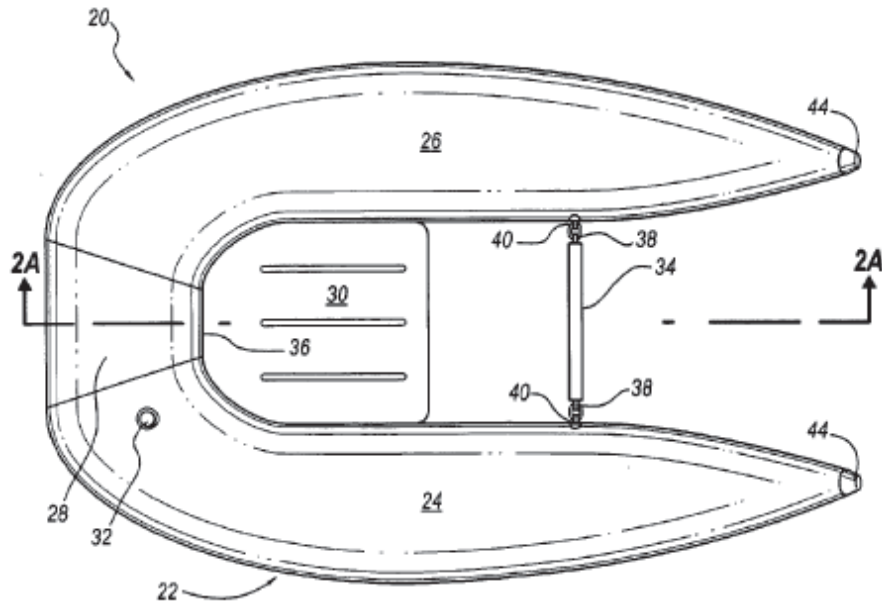


FIG. 2

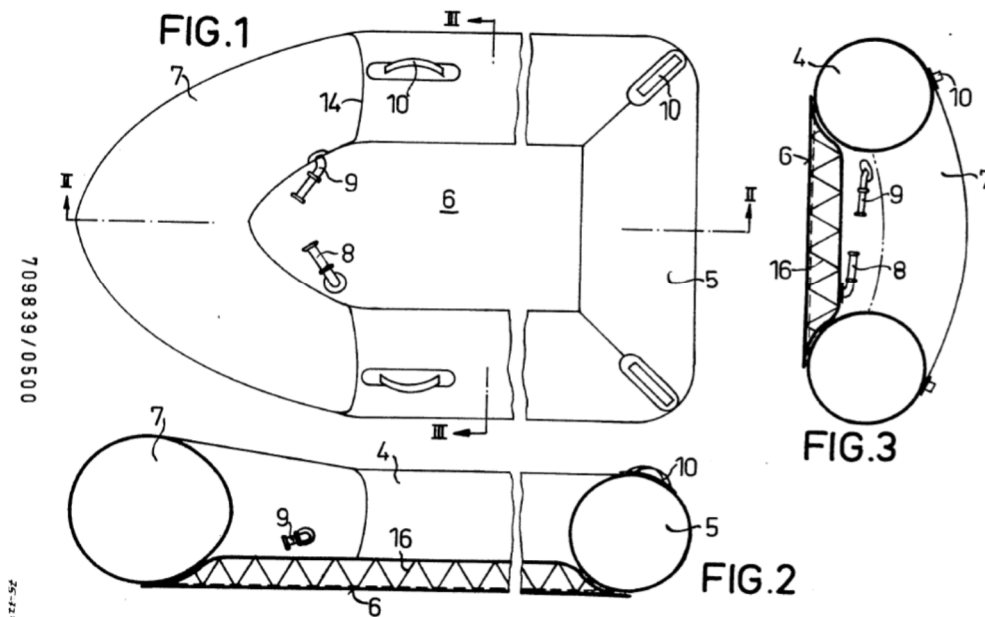
+

(Ex. 1011 at FIG. 2)

159. It would have been obvious to fluidly connect Hoffmann's first and second inflatable chambers so that they could be filled with a single air valve as disclosed by Scadden to reduce the time and steps for inflating Hoffmann's paddlecraft. Additionally, interconnecting Hoffmann's first and second inflatable chambers so that they could be filled with a single air valve would be a routine implementation for a POSITA as informed by Scadden (simply providing fluid communication between the chambers), rendering predictable results.

- I. “wherein the second inflatable chamber at least partially overhangs the first inflatable chamber” (Claim 2);
“wherein the second inflatable chamber overhangs a front portion of the first inflatable chamber (Claim 3);
“wherein the second inflatable chamber overhangs the first inflatable chamber by at least 5% of the length of the first inflatable chamber (Claim 7).**

160. As shown in Figs. 2 and 3, Hoffmann’s second inflatable chamber (tubes 4 & 7) overhangs the first inflatable chamber (floor 6). Specifically, as shown in Fig. 2, Hoffmann’s second inflatable chamber (tubes 4 & 7) overhangs the front portion of the first inflatable chamber (floor 6); and, as shown in Fig. 3, Hoffmann’s second inflatable chamber (tubes 4 & 7) overhangs the side portions of the first inflatable chamber (floor 6) along the entire sides of the first inflatable chamber (over 5%). “In the drawing: Fig. 1 is a plan view of an inflatable boat in an inflated state ready for use; Fig. 2 is a sectional view along line II-II and Fig. 3 is a sectional view along line III-III in Fig. 1.” (Ex. 1007, [0008].)



(Ex. 1007 at FIGS. 1-3.)

161. As shown in FIGS 3-4, Hoge's second inflatable chamber (sides 14/16) at least partially overhangs the first inflatable chamber (inflatable floor 12). See, especially, Figs. 3 and 4. As shown in Fig. 1, this overhang would extend the entire length of the inflatable floor 12.

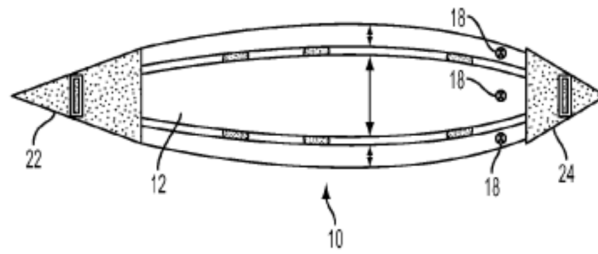


FIG. 1

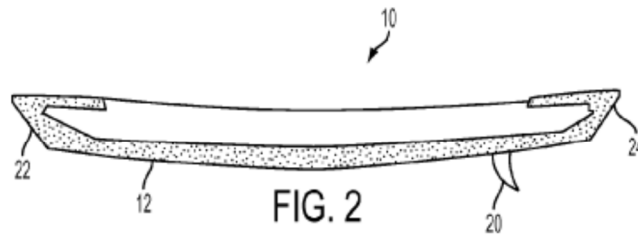


FIG. 2

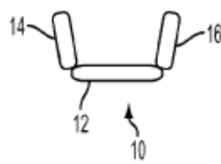


FIG. 3

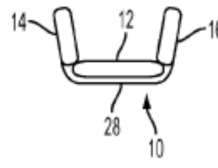


FIG. 4

(Ex. 1009 at FIGS. 1-4.)

162. The Figures of Hoge are reliable to inform a POSITA and illustrate the sides 14/16 are stacked upon and are overhanging the floor 12. Hoge specifically directs a POSITA to these figures when describing the position and orientation of the inflatable sides 14, 16 with respect to the inflatable floor 12 and the fabric floor 28. For example, Hoge states, “**as shown in FIG. 4**, the inflatable side 14, 16 mas be glued or welded to a ... fabric floor 28 and the inflatable floor 12 ... **may be**

positioned and attached **on top of** the ... fabric floor 28.” (Ex. 1009 at [0032].) As another example, Hoge states, “[a]s **shown in FIG. 3**, the inflatable sides 14, 16 are **configured to be inclined outboard** from the inflatable floor 12.” (*Id.* at [0033].) As such, because Hoge specifically directs the reader to FIG. 3 and FIG. 4 for presenting orientational and positional aspects of the inflatable sides 14, 16 with respect to the inflatable floor 12 and other components, a POSITA would consider FIGS. 3 and 4 as reliable representations of positional and orientational aspects with respect to the inflatable sides 14, 16 and the inflatable floor 12. Additionally, Hoge describes FIG. 1 as a “top view of an inflatable kayak in accordance with an embodiment”; Hoge describes FIG. 3 as “a cross-sectional view taken along lines 3-3’ of FIG. 2 of the inflatable kayak in accordance with an embodiment”; and describes FIG. 4 as “a cross-sectional view taken along lines 3-3’ of FIG. 2 of the inflatable kayak in accordance with an embodiment including a non-inflatable floor.” (*Id.* at [0024]-[0027].) These statements further reflect that Hoge intended FIG. 1, FIG. 3 and FIG. 4 to be representative of an actual embodiment of the inflatable kayak and not merely a “conceptual view” for example as Hoge describes FIG. 5. (*Id.* at [0028].) Finally, the Figures are consistent with each other with respect to the stacked and overhanging relationships. Since the FIGS are fully consistent, it further shows that a POSITA can reasonably and reliably rely on the drawings for this understanding.

J. “wherein the first inflatable chamber is wider than the second inflatable chamber” (Claim 9).

163. Hoge’s first/lower stand-up board chamber (inflatable floor 12) is wider in the arrowed section than the second/upper rail chamber (inflatable sides 14, 16). Hoge discloses that the beam of kayak is 22-32 inches wide, while the thickness of the sides ranges from 3 inches to 6 inches. Thus, even if the beam is 22 inches (lowest in the range) and the thickness of the sides are 6 inches (highest in the range), the width of the inflatable floor 12 would be about 10 inches ($22 \text{ in} - (2 \times 6 \text{ in.}) = 10 \text{ in}$). “The inflatable kayak 10 may have a length ranging from 9 feet to 21 feet, a beam may be 22-32 inches, and a thickness of the drop stitch material used for the inflatable floor 12 and the inflatable sides 14, 16 may be between 3 inches to 6 inches.” (Ex. 1009 at [0034].) Consistent dimensions are shown in Fig. 3 and Fig. 4 (and as discussed above in paragraph 160). The figures in Hoge are reliable and useful for a POSITA in illustrating and confirming various relationships between the floor 12 and the sides 14, 16.

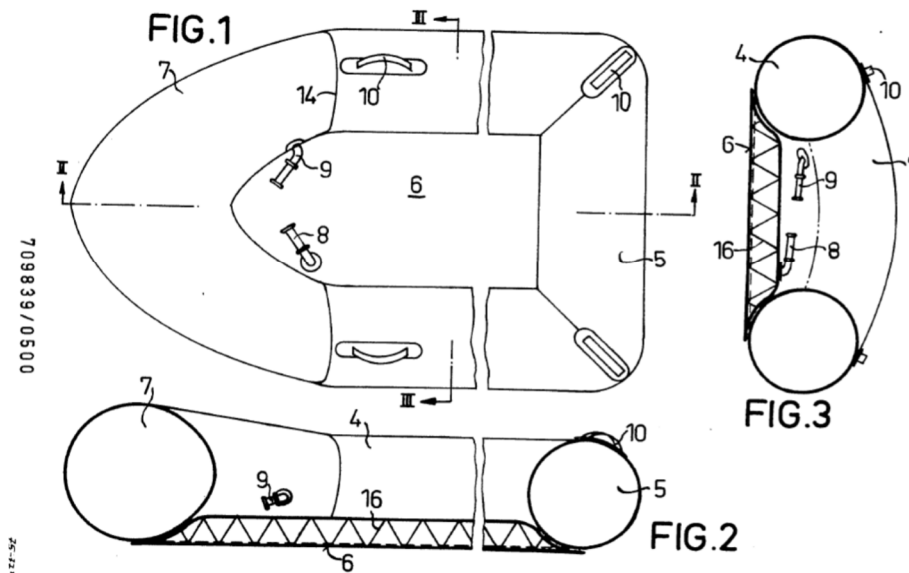
164. The Swan patent shows that the first/lower inflatable stand-up board chamber (paddleboard 8) is wider than the second/upper inflatable chamber (side tubes 2). Swan’s side tubes are 11 inches wide, while the entire boat is about 4 feet wide. Thus, subtracting 22 inches (the width provided by two tubes 2) from the width of the boat results in the paddleboard 8 being at least 26 inches wide. “In one embodiment, the sides of an inflatable boat 1 are defined by two elongated tubes 2

preferably about 12.5 feet long, **forming a boat about 4 feet wide**. The two side tubes 2 come together in the front to form a bow 3 and may further curve up near the bow 3 about 12 inches to help prevent waves from breaking over the bow 3 and into the boat 1 when underway. **The two side tubes 2, preferably about 11 inches in diameter**, connect to a transom 4 on the stern end.” (Ex. 1010 at [0027].)

165. It would be obvious to design Hoffmann’s floor 6 to be wider than the side tubes 4 as instructed by Swan and Hoge to provide an even more spacious interior area for passengers. Modifying Hoffmann in such a way would be routine narrowing of the side tubes 4 and/or widening of the floor 6 for a POSITA rendering predictable results.

K. “wherein the rail slopes inward towards a center of the first inflatable chamber” (Claim 11).

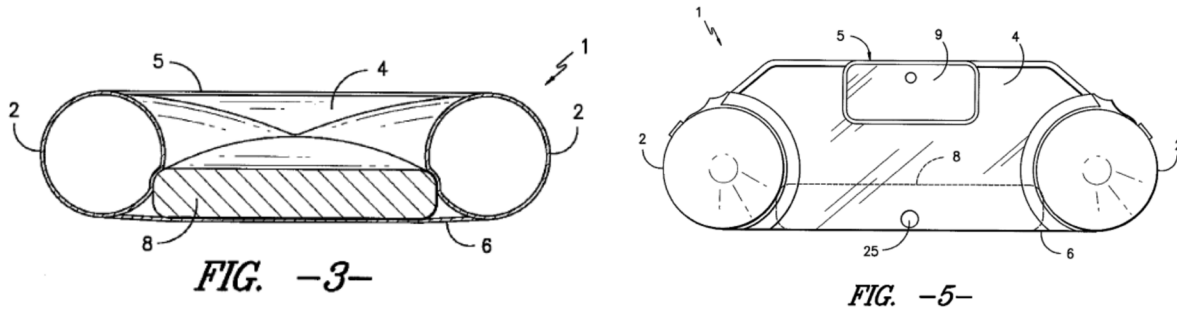
166. As shown in Fig. 3, Hoffmann’s rail formed by tubes 4 slopes inward from the bottom towards a center of the first inflatable chamber (floor 6). “In the drawing: FIG. 1 is a plan view of an inflatable boat in an inflated state ready for use; FIG 2 is a sectional view along the line II-II and FIG. 3 is a sectional view along the line III-III in FIG. 1.” (Ex. 1007 at [0012].) As I discuss above in paragraphs 124 & 132, Hoffmann’s FIG. 1, FIG. 2, and FIG. 3 are reliable for illustrating the relationship of the second/upper inflatable chambers (tubes 4 & 7) with respect to the first/lower inflatable chamber (floor 6).



(Ex. 1006 at FIGS. 1-3.)

167. Swan's second inflatable chamber (tube 2) are side walls that form a rail around at least a portion of the first inflatable chamber (paddleboard 8). The rail (tubes 2) of Swan slope inward from the bottom towards a center of the first inflatable chamber (paddleboard 8), which provides for the friction fit. "In one embodiment, the sides of an inflatable boat 1 are defined by **two elongated tubes 2 preferably about 12.5 feet long**, forming a boat about 4 feet wide." (Ex. 1010 at [0027]); "The paddleboard 8 is held securely in place directly above the bottom member 6 of the boat 1 by a tight fit that may be accomplished through static friction resulting from air pressure between the side tubes 2 of the boat 1 and the sides of the paddleboard 8. In a preferred embodiment, the bow end of the paddleboard 8 may end about 9 inches from the bow 3 of the boat 1, resulting in a **paddleboard 8 with a length of about 10.5 feet.**" (*Id.* at [0036]); "In a second

embodiment, the sides of the paddleboard 8 may extend at a downwardly angle to fit in a space existing between the bottom member 6 of the boat 1 and the inflated side tubes 2 of the boat 1.” (*Id.* at [0037].)



(Ex. 1010 at FIGS. 3, 5.)

- L. “wherein at least one of the first inflatable chamber and the second inflatable chamber are drop-stitch chambers.” (Claim 12).

168. Each of Hoge’s inflatable stand-up board (floor 12) and rail (inflatable sides 14/16) are drop-stitch chambers. “As shown in FIGS. 1 and 2, the inflatable kayak 10 includes an **inflatable floor 12 made of high-pressure drop stitch material**. An example of the drop stitch material is shown in FIG. 5 where thousands of drop stitches are provided to maintain an equal distance between the top and bottom surfaces of the inflatable floor 12.” (Ex. 1009 at [0030].) “Glued or welded directly to the inflatable floor 12 are **inflatable sides 14, 16 which are also made of high-pressure drop stitch material** formed as port and starboard sides of the inflatable floor 12, respectively.” (*Id.* at [0031].)



DROPSTITCH-DECK

"Drop Stitch" refers to a method of construction that allows for much higher inflation pressures. Thousands of tiny threads connect the top and bottom layers of the deck, counterbalancing air pressure when it is inflated. This allows for remarkable structural rigidity (and increased performance) without sacrificing portability.

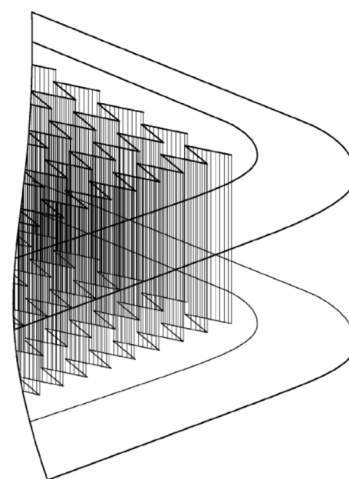


FIG. 5

Outdoor i Series | Hobie_Drop-Stitch - 2024 Website

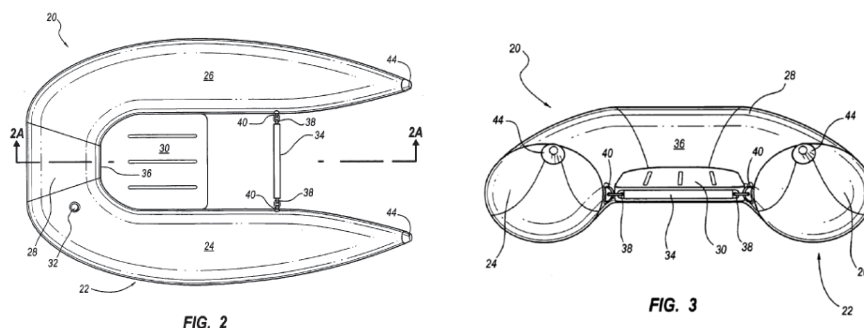
(Ex. 1009 at FIG. 5.)

As I also discuss herein in paragraphs 123-124 and 127, Hoffmann's first inflatable chamber (floor 6) and Swan's first inflatable stand-up board chamber (paddleboard 8) are drop-stitch chambers.

M. "wherein the second inflatable chamber under-hangs the first inflatable chamber for at least 5% of the length of the first inflatable chamber" (Claim 8).

169. Scadden discloses connecting second inflatable side chambers (pontoons 24 and 26) to the first inflatable stand-up board chamber (inflatable platform 30) where such second inflatable side chambers 24, 26 form a rail around the stand-up board chamber 30. "In the illustrated preferred embodiments of FIGS. 1-4, the very lightweight float boat of the invention, shown generally at 20 includes a unitary twin pontoon hull 22 comprising a pair of spaced apart parallel extending inflatable pontoons 24 and 26. Boat 20 further includes an inflatable platform 30 that extends between the spaced apart inflatable pontoons 24 and 26.

Preferably the pontoons and transom and the platform are interconnected to be air filled through a single conventional air valve 32.” (Ex. 1011 at 4:14-31.)



Ex. 1011, FIGS. 2 & 3.

170. As shown in Fig. 3, Scadden’s second inflatable chamber (inflatable side chambers 24, 26) under-hang the first inflatable stand-up board chamber (platform 30). And as shown in Fig. 2, this under-hang would extend along the entire length (over 5%) of the first inflatable stand-up board chamber (platform 30). Scadden’s Figures are reliable for illustrating this relationship because Scadden discloses that “FIGS. 1-4 include a unitary twin **pontoon hull 22** comprising a pair of spaced apart parallel extending inflatable **pontoons 24 and 26**”. (Ex. 1011 at 4:14-19.) By its definition, a pontoon includes a pair (or more) floats (typically in the form of a cylinder) that support a deck or a platform either thereabove or therebetween. As such, a POSITA would expect that the cylindrical floats in the pontoon under-hang (at least in part) the deck or platform that is being supported by the floats. Consistently, Scadden explains that “an inflatable platform 30 ... extends between the spaced apart inflatable pontoons 24 and 26, intermediate the lengths of the

pontoons and adjacent the transom 28 at the stern of the boat.” (*Id.* at 4:20-23.) This description is consistent with the Figures and accurately illustrates the positional relationship of the platform 30 with respect to the pontoon floats 24 and 26. Additionally, Scadden describes “FIG. 1 is a side elevation view of the hull of the float boat of the invention; FIG. 2, a top plan view of the hull including an integral inflatable load platform, FIG. 3, a front elevation view of the float boat of FIG. 2; FIG. 4, a rear elevation view...” (*Id.* at 3:45-54.) The description of the Figures is a further confirmation that the Figures are actual representations and that they disclose a “float boat”. The Figures are not conceptual or abstract in nature, but rather very clearly indicate the key details of the boat. Finally, the Figures are consistent with each other and with respect to the various under-hang relationships.

171. It would be obvious to have Hoffmann’s inflatable side tubes be modified to under-hang the respective floors as informed by Scadden to provide a higher elevation of the stand up board. This higher platform elevation would benefit applications such as fishing. Likewise, modifying Hoffmann in such a way would be a routine implementation for a POSITA requiring moderate redesign of Hoffmann (as informed by Scadden), and rendering predictable results.

XI. Motivation to Combine and Expectations of Success

A. Motivation to Combine

172. In addition to any specific motivations to combine as provided above in Section X, a POSITA would have been further motivated to combine the teachings from Hoffmann, Hoge, Swan, Scadden, Airhead SS and Hobie iSeries for several reasons.

173. Hoffmann, Hoge, Swan, Scadden, Airhead SS and Hobie iSeries are all in the same field of endeavor, namely the field of inflatable watercraft. Hoffmann discloses, “[t]he invention relates to inflatable boats...” (Ex. 1007 at [0001]); and further, “the manufacture of the floor from so-called spacer fabric is also of important. The inflatable boat has almost flat floor surfaces inside and out, which offer occupants comfortable, tip-proof seating or standing options...” (*Id.* at [0005]. Hoge discloses, “[e]mbodiments relate[d] to watercraft, and more particularly, to an inflatable kayak having drop stitch construction throughout ...”. (Ex. 1009 at [0002].) Swan discloses, “[p]rovided is an inflatable boat including a stand up paddleboard functioning as the floor of the boat....” (Ex. 1010 at [0007].) Scadden discloses, “[o]ther objects are to provide ... a lightweight float boat including an inflatable load platform and/or to a float boat, including a standing deck....” (Ex. 1011 at 1:63-67.) Airhead SS discloses, “[t]his is one of the most stable inflatable SUP boards on the market.” (Ex. 1021 at 2). Hobie iSeries discloses

“Stand Up Paddleboards – Inflatable Series.” (Ex. 1022 at 2.) As such, a POSITA would be motivated to combine the teachings of all of Hoffmann, Hoge, Swan, Scadden, Airhead SS and Hobie iSeries as they all pertain to inflatable water craft.

174. More particularly, a POSITA would be further motivated to combine the teachings of Hoffmann, Hoge, Swan, Airhead SS and Hobie iSeries as they all pertain to such inflatable watercraft having drop-stitched inflatable floor chambers. More particularly, a POSITA would be further motivated to combine the teachings of Hoffmann, Hoge, Swan, Scadden, Airhead SS and Hobie iSeries as they all pertain to inflatable watercraft having inflatable stand-up board chambers.

175. As discussed above, while Hoge does not expressly state that its inflatable floor is a stand-up board; a POSITA would understand and find it obvious that Hoge’s floor chamber 12 is (or can obviously be used as) a stand-up board. Hoge discloses that its floor chamber 12 is inflated to a pressure of 15 psi, which is in the range of desired pressures for inflatable drop stitched stand-up paddle boards (“Inflatable stand up paddleboards are made of drop stitched material allowing them to be inflated to very high pressures, generally from 12 psi to 15 psi.” (Ex. 1012 at [0005].) Swan also discloses that such drop-stitch inflatable chambers are well suited for stand-up paddle boards. (Ex. 1010 at [0004].) For at least these reasons, it would be obvious to a POSITA that Hoge’s inflatable floor 12 is a stand-up board chamber.

176. A POSITA would be further motivated to include the teachings of Hoffmann in such combinations at least because Hoffmann discloses that its inflatable boat, “meets all the requirements for equipping and mobilizing individuals as well as for use as a buoyancy and swimming device in the broadest possible context, for example, as a working aid for engineer units or in disaster control. The specific coordination of the side gunwale tubes with the basic dimensions of the boat body and their all-around connection with the insertion of a stern side transverse tube. The stern side transverse tube is preferably in open connection with the side tubes and is inflatable together with them via a single filling valve. This single filling valve results in an unexpectedly favorable ratio of the dead weight to the holding and load-bearing capacity of the fully inflated boat with a relatively large usable interior area. This ratio can be further positively shifted by possibly dispensing with otherwise necessary stiffening and reinforcing elements.” (Ex. 1007 at [0004].) A POSITA would be motivated to include these design elements of Hoffmann due to these clearly stated advantages and benefits.

177. A POSITA would be further motivated to include the teachings of Hoge in such combinations at least because Hoge discloses that its disclosure meets the stated need and advantages of a “rigid kayak ... with economy and portability of an inflatable kayak.” (Ex. 1009 at [0008].) Further, Hoge discloses that its disclosed design “improves speed and ease of paddling.” (*Id.* at [0009].) A POSITA would

thus be motivated to include such designs of Hoge due to these additional stated advantages.

178. A POSITA would be further motivated to include the teaching of Swan in such combinations at least because Swan discloses that its design “makes it possible for two people to stand up and cast fishing lines, ... stand up to search for fish, or use the resulting stable platform to dive or step into the water. (Ex. 1010 at [0005].) Swan also discloses that its design allows that the paddle board floor can be removed, re-inflated and used as an inflatable stand up paddle board. (*Id.*) And further, Swan discloses that its design “is portable in the trunk of a medium sized automobile or SUV and can be owned and operated at a fraction of the cost of larger, heavier, flat craft which are made out of rigid materials (not inflatable) such as wood, fiber glass, or metal.” (*Id. See also, id.* at [0007]-[0017].) A POSITA would thus be motivated to include such designs of Swan at least due to these additional stated advantages.

179. A POSITA would be further motivated to include the teaching of Scadden in such combinations because Scadden discloses that its design is “very lightweight, easily compacted for carrying and storage, while opening and inflating to become a full-sized operable float boat.” (Ex. 1011 at 1:59-62.) Additionally, Scadden discloses that its design “will provide a float boat with standing deck that will slide from a storage position beneath the seat to a user position forward of the

seat”. (*Id.* at 2:24-32.) And further, “[s]uch a float boat is readily transported while deflated and compacted into a back-pack, ground vehicle....” (*Id.* at 3:14-19.) And “[e]ven when fully inflated the very light-weight boat is readily carried manually or by vehicle. (*Id.*) Further, “the boat hull also readily accommodates additional components to make a lightweight float boat that will allow a fisherman to safely sit or stand, while using the boat.” (*Id.* at 3:20-23.) A POSITA would thus be motivated to include such designs of Scadden due to these additional stated advantages.

180. A POSITA would be further motivated to include the teaching of Airhead SS in such combinations at least because Airhead SS discloses: that its inflatable SUP is “[s]uper stable, rigid and strong...” and that “[t]he side chambers make this board extra wide” and “create extra buoyancy and stability” making it “a great choice” for “fish[ing]” or “SUP yoga.” (Ex. 1021 at 1, 4, 11.) A POSITA would thus be motivated to include design features of Airhead SS at least due to these additional stated advantages.

181. A POSITA is a skilled and experienced artisan, one who would commonly look to multiple solutions, such as disclosed in Hoffmann, Hoge, Swan and Scadden to improve upon and/or modify inflatable watercraft and such watercraft that include inflatable stand-up boards. These combinations and modifications are obvious to a POSITA.

B. Reasonable Expectations of Success & Predictability

182. In addition to any specific reasonable expectations of success to combine provided above in Section X, a POSITA would have held near certain expectations of success and predictability to combine the teachings from Hoffmann, Hoge, Swan, Scadden, Airhead SS and Hobie iSeries. As outlined in this Declaration, there are several reasons that indicate success to a POSITA in making these modifications.

183. A POSITA would have a reasonable expectation of success combining Hoffmann, Hoge, Swan, Scadden, Airhead SS and Hobie iSeries at least because each discloses similar and related technologies as discussed above. (*See* Section XI.A.) Any combination of these similar and related technologies would not require undue experimentation and would render predictable results. (*Id.*)

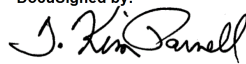
184. Additionally, the disclosures of Hoffmann, Hoge, Swan and Scadden are of significant detail, including drawings, that readily instruct a POSITA how to incorporate such uncomplicated mechanical components into various designs, each rendering predictable results without undue experimentation.

XII. DECLARATION

185. I hereby declare under the penalty of perjury that the following is true and correct. All statements made herein of my own knowledge are true and all statements made on information and belief are believed to be true. I understand that perjury and/or willful false statement and the like are punishable by fine or imprisonment, or both (18 U.S.C. §1001).

Date: June 18, 2024

Respectfully submitted,

DocuSigned by:

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T. Kim Parnell, Ph.D., P.E.