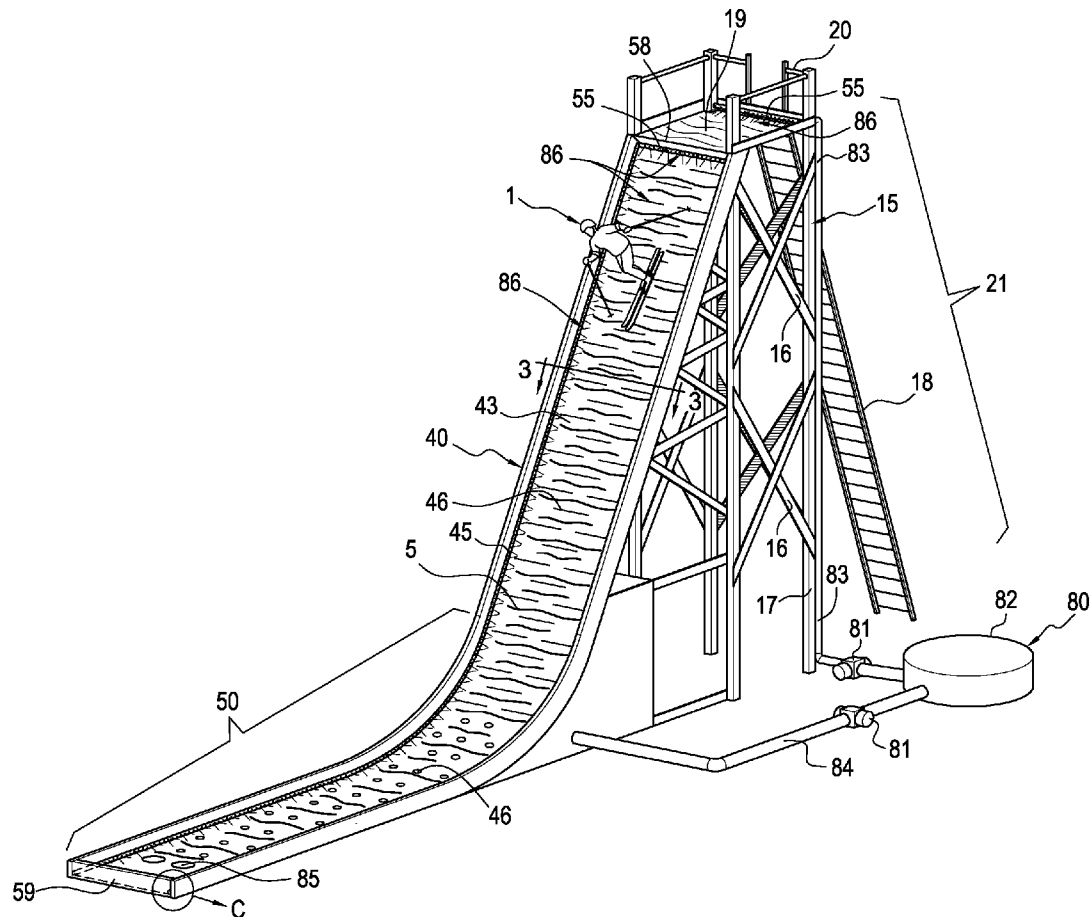


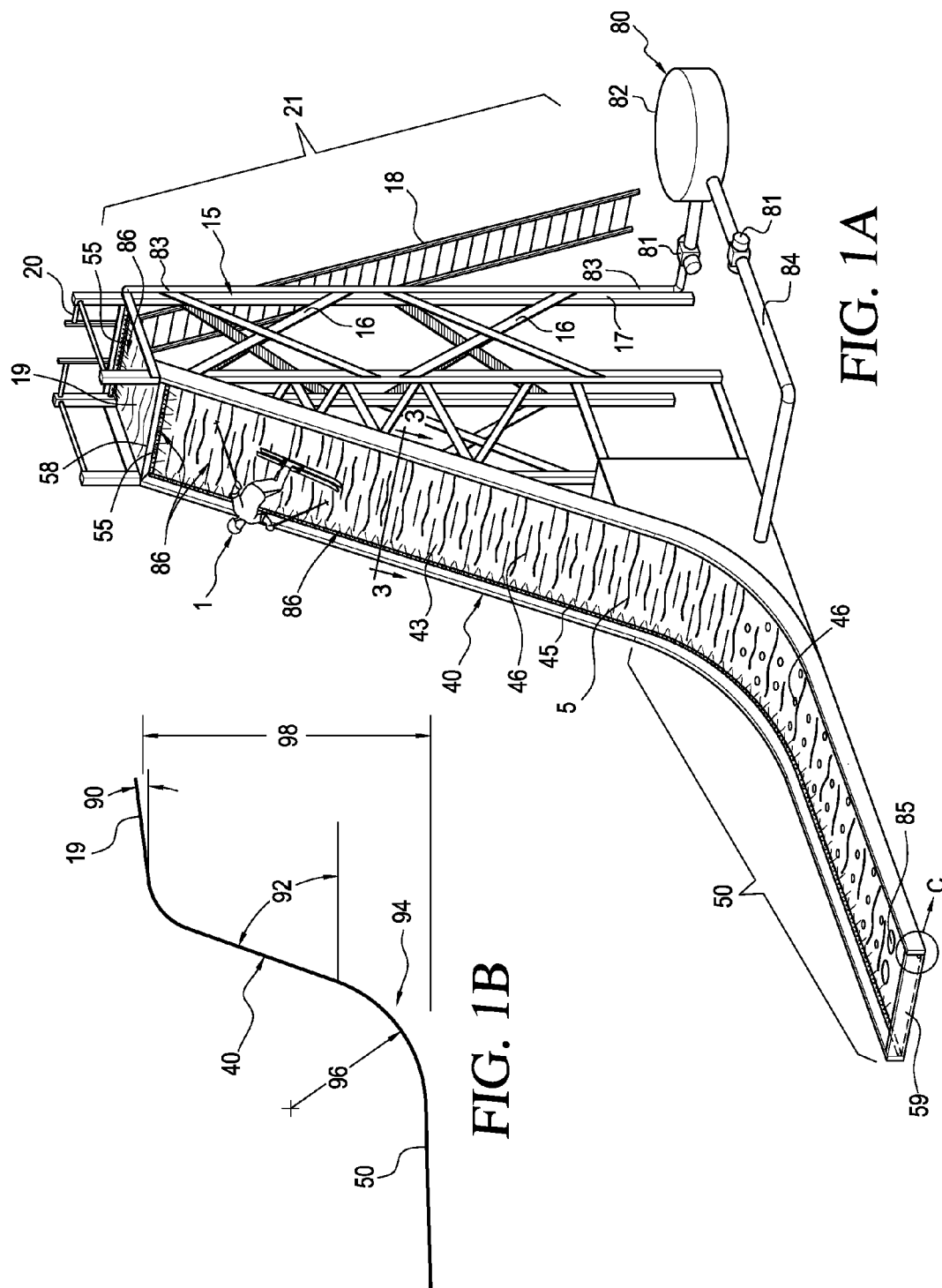


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(19) **United States**(12) **Patent Application Publication**
NORTHAM(10) **Pub. No.: US 2012/0122596 A1**(43) **Pub. Date: May 17, 2012**(54) **HYDROPLANE SPORTING ENVIRONMENT
AND DEVICES AND METHODS THEREFOR****Publication Classification**(76) **Inventor:** **Christopher Dale NORTHAM**,
Rocklin, CA (US); **Shon Michael
Northam**, legal representative,
Cottonwood, CA (US)(51) **Int. Cl.**
A63G 21/14 (2006.01)
A63G 21/18 (2006.01)(52) **U.S. Cl. 472/90**(21) **Appl. No.: 13/358,043**(22) **Filed: Jan. 25, 2012****Related U.S. Application Data**(63) Continuation of application No. 12/126,847, filed on
May 23, 2008.(60) Provisional application No. 60/931,554, filed on May
23, 2007, provisional application No. 60/932,418,
filed on May 30, 2007, provisional application No.
60/932,863, filed on Jun. 1, 2007.(57) **ABSTRACT**

A hydroplaning device for a rider to perform liquid sport athletic maneuvers, which comprises a support member having a height relative to the ground and a slope; a surface member disposed on the support member, wherein the surface member forms at least an angled surface and a catchment area. The device also comprises a liquid circulation system, having a liquid source, at least one feed line and at least one return line with the liquid source being in fluid communication with the at least one feed line and the at least one return line being in fluid communication with at least one of the liquid source and a disposal location. The device includes at least one liquid dispenser disposed adjacent to the support member or the surface member.





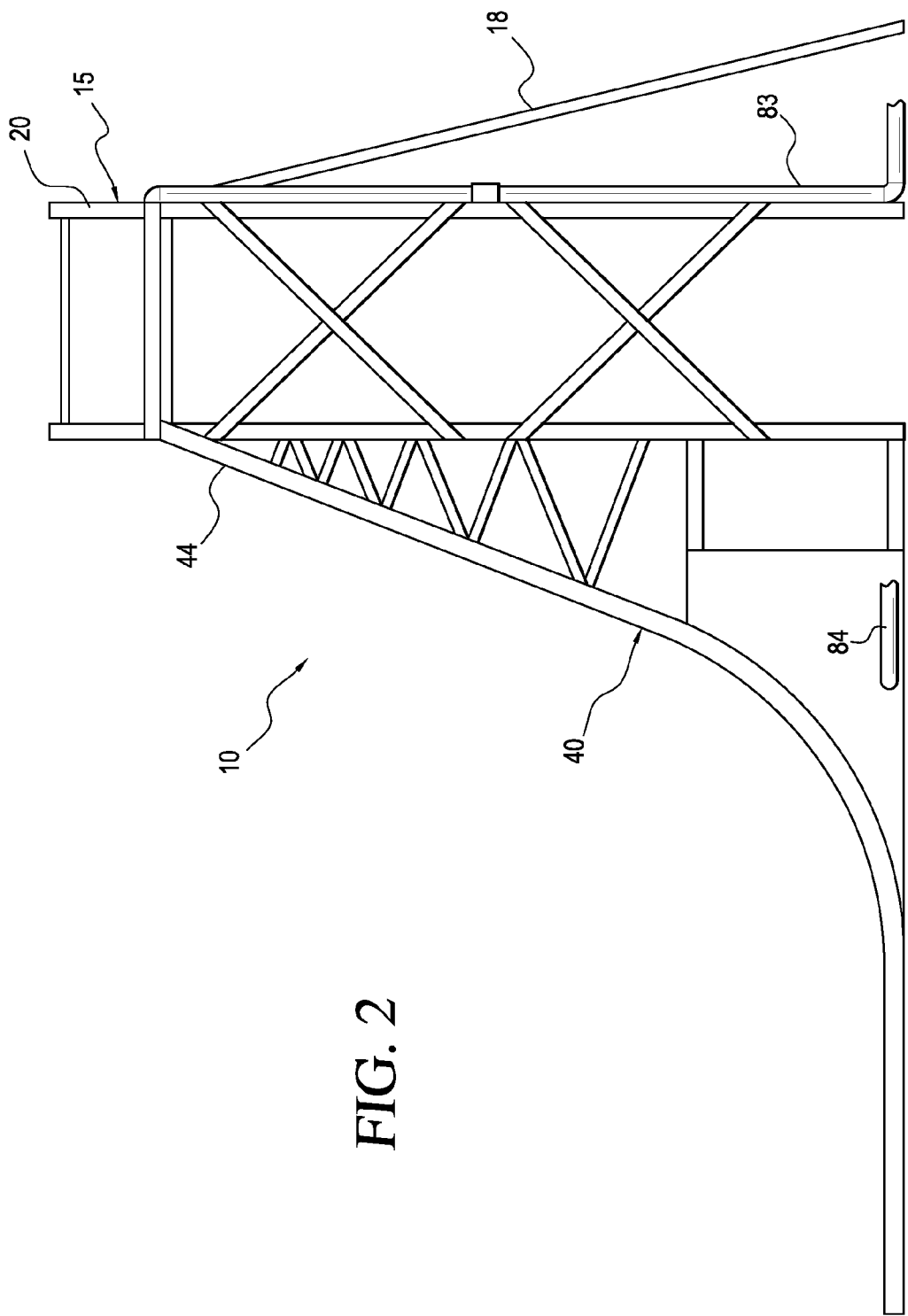
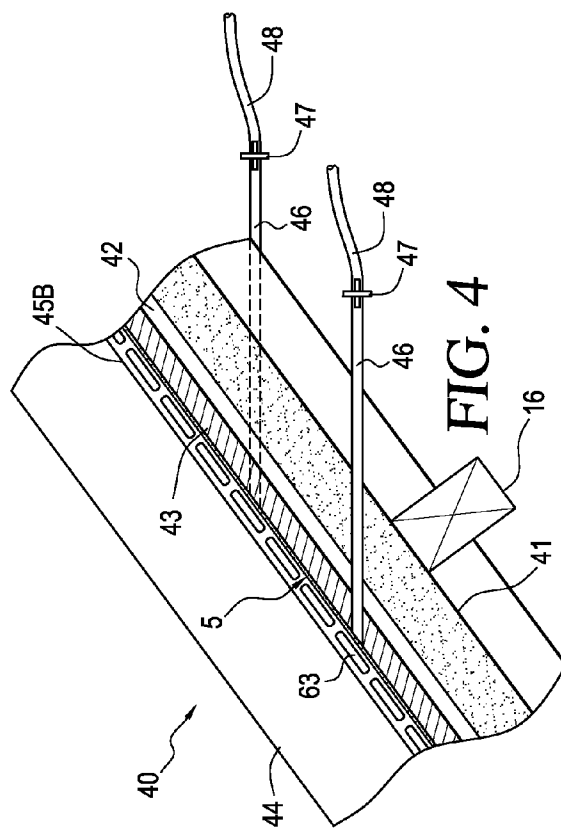
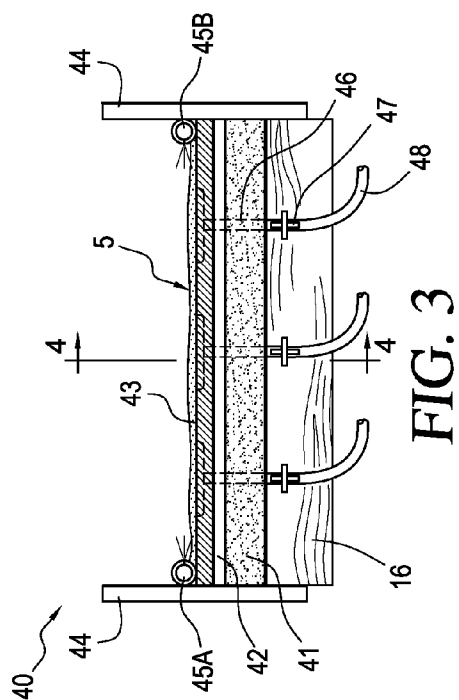
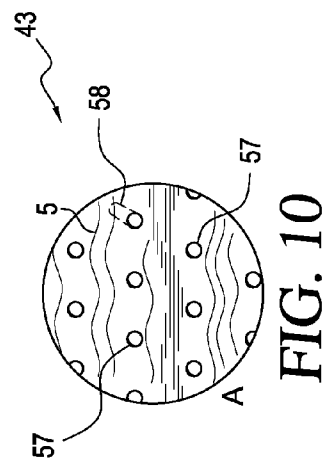
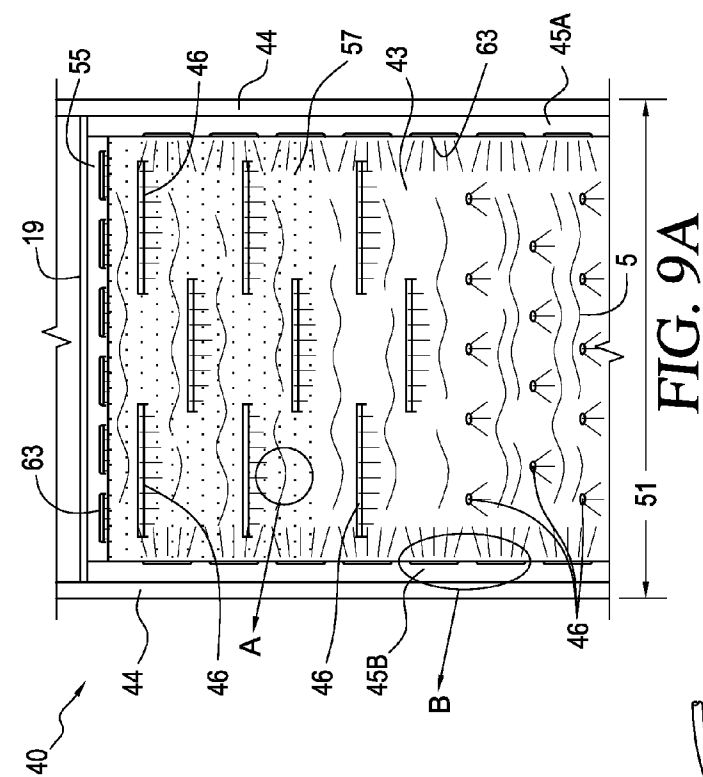


FIG. 2



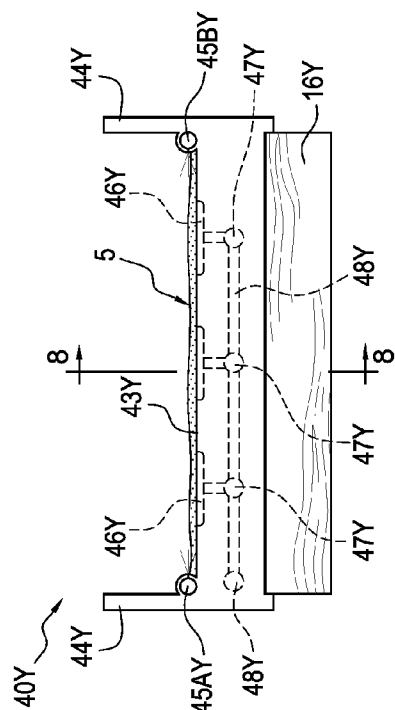


FIG. 7

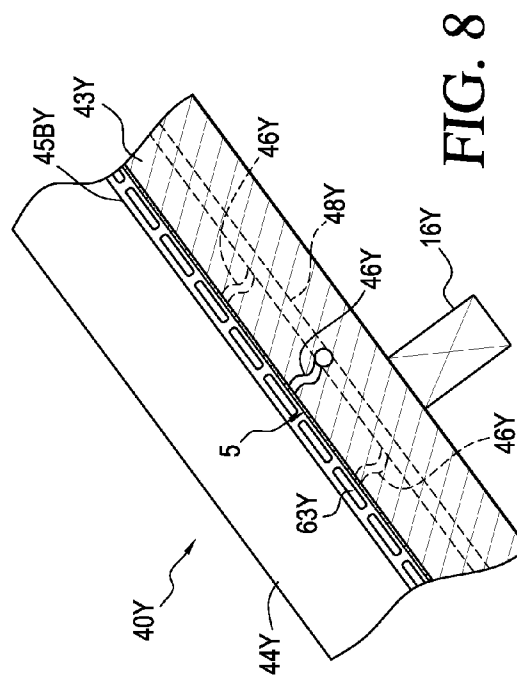


FIG. 8

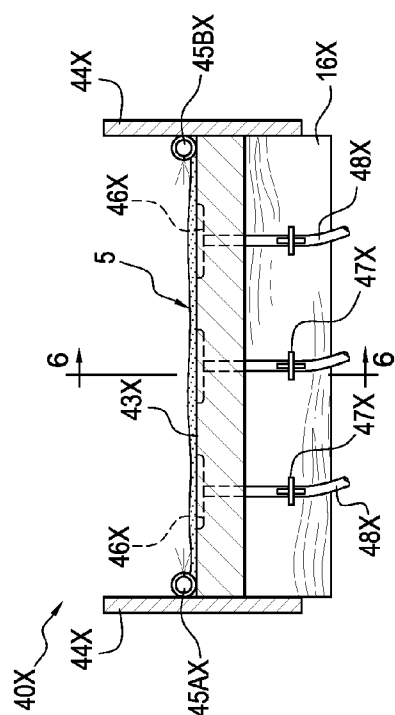


FIG. 5

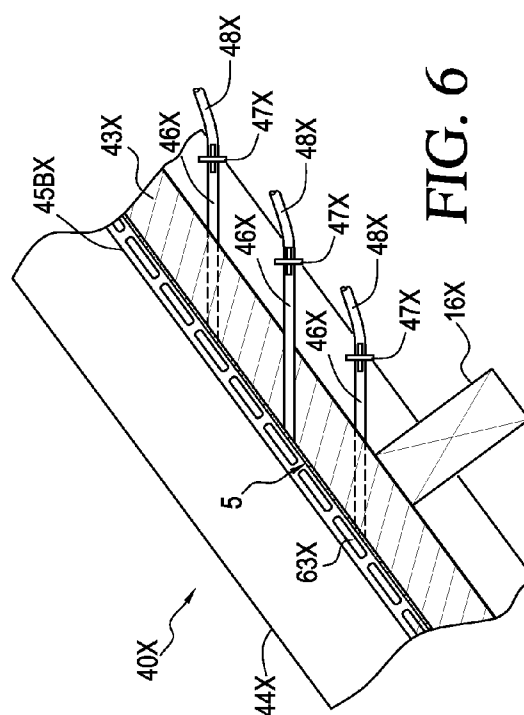


FIG. 6

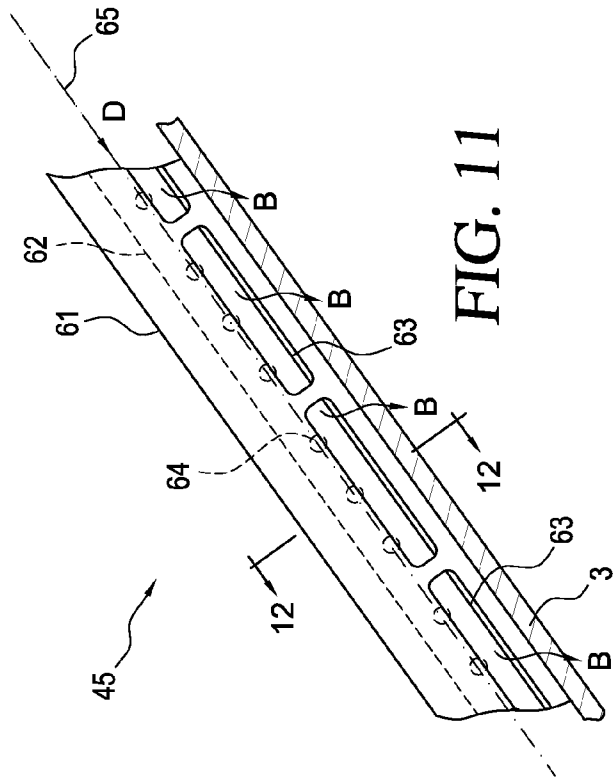


FIG. 11

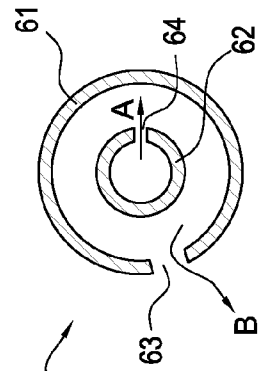


FIG. 12

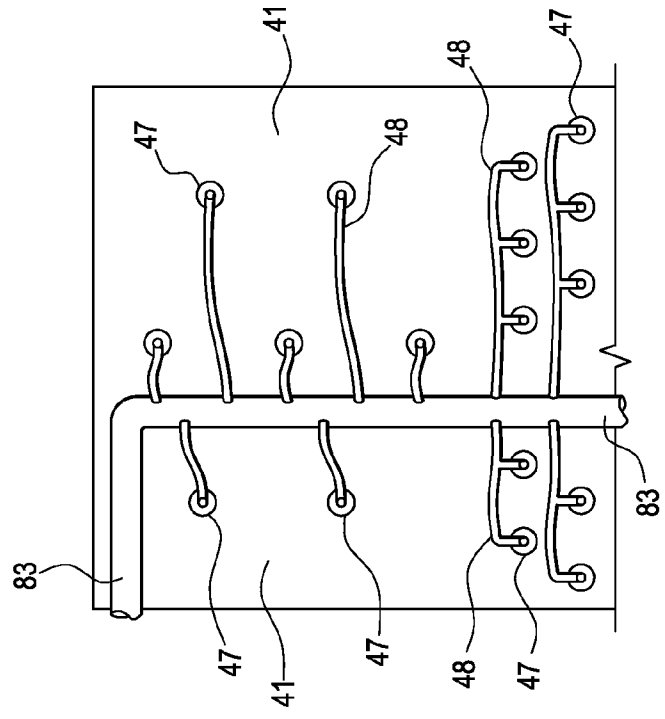


FIG. 9B

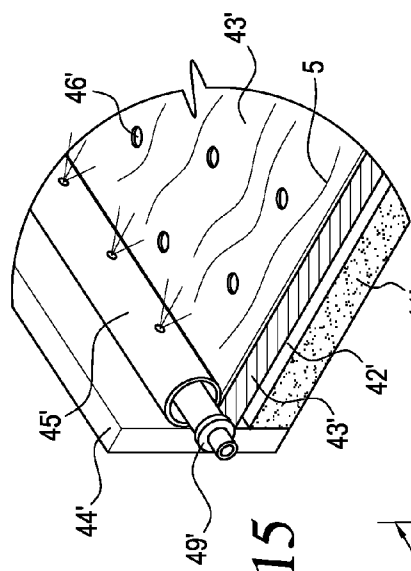


FIG. 13

FIG. 15

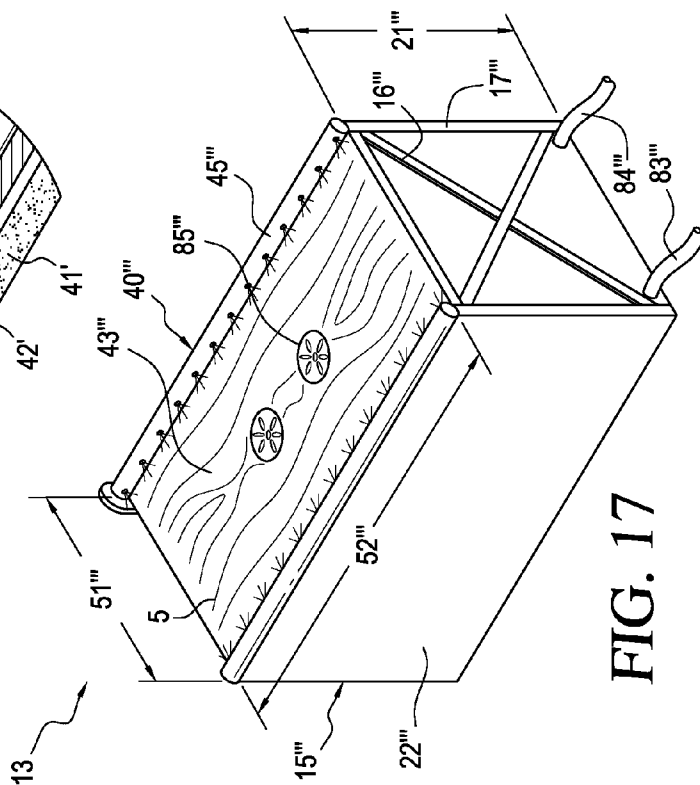


FIG. 14

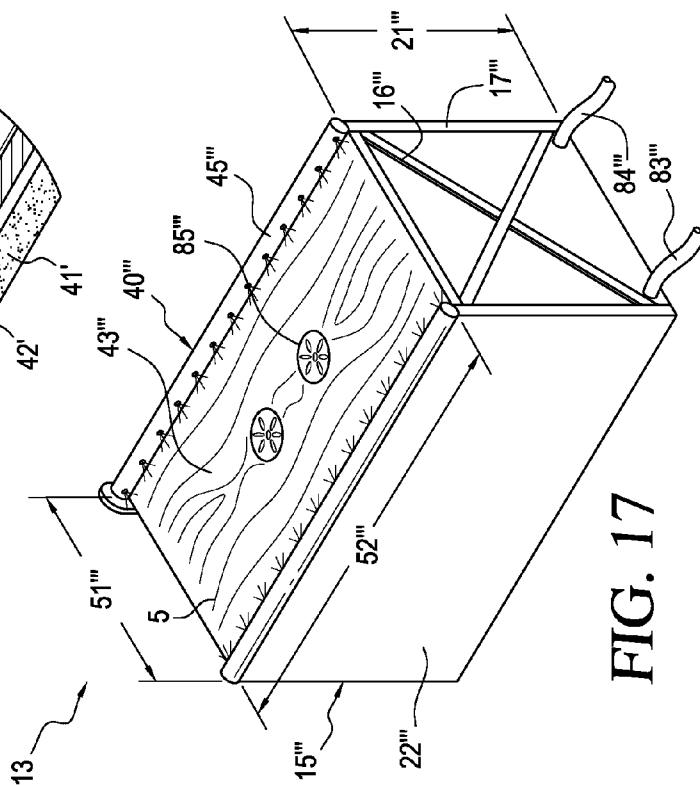


FIG. 15

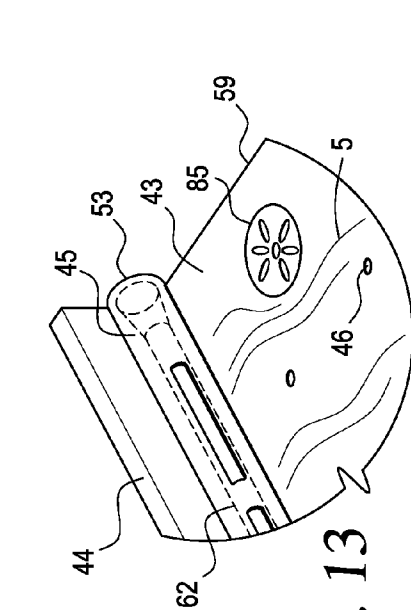
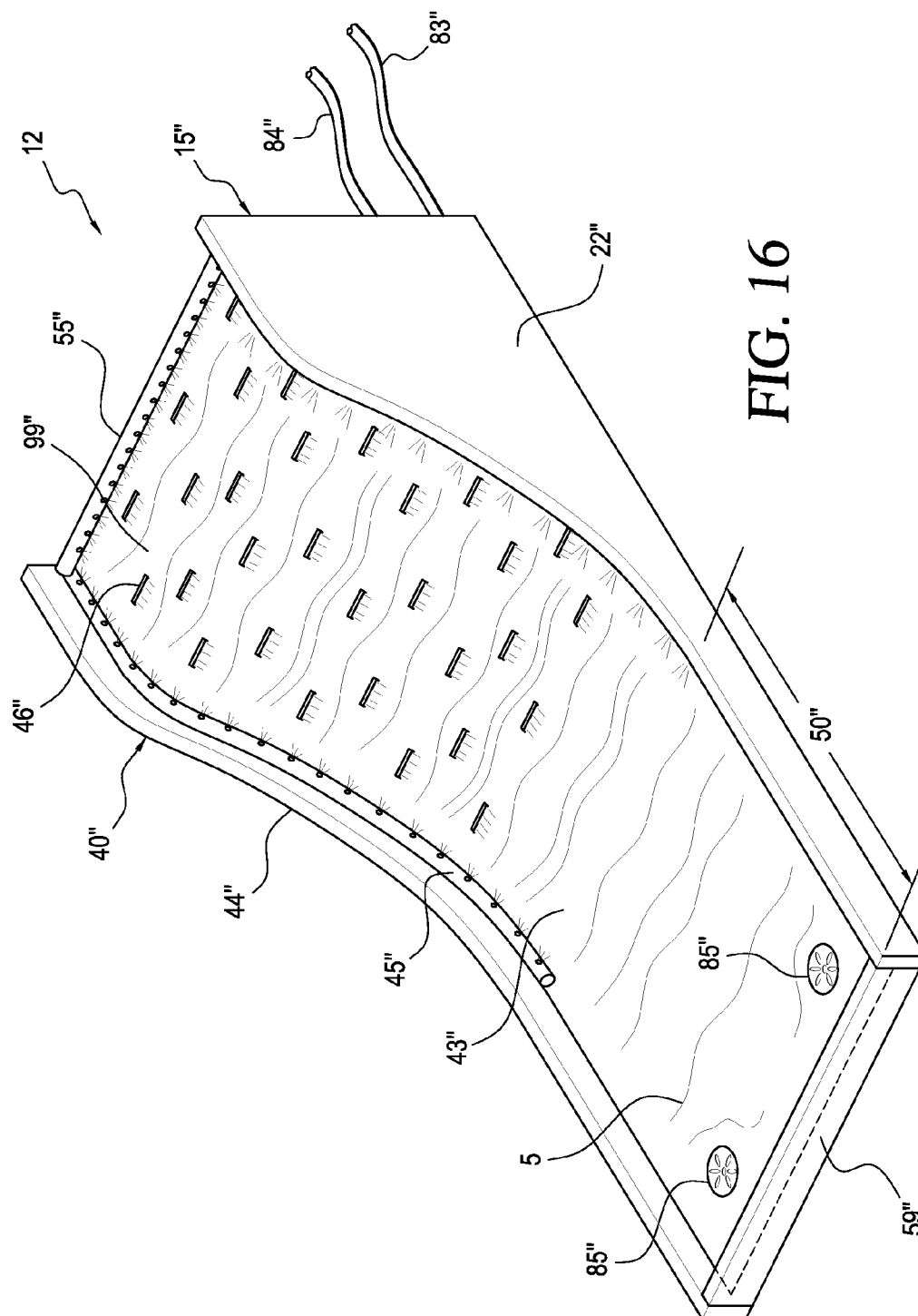
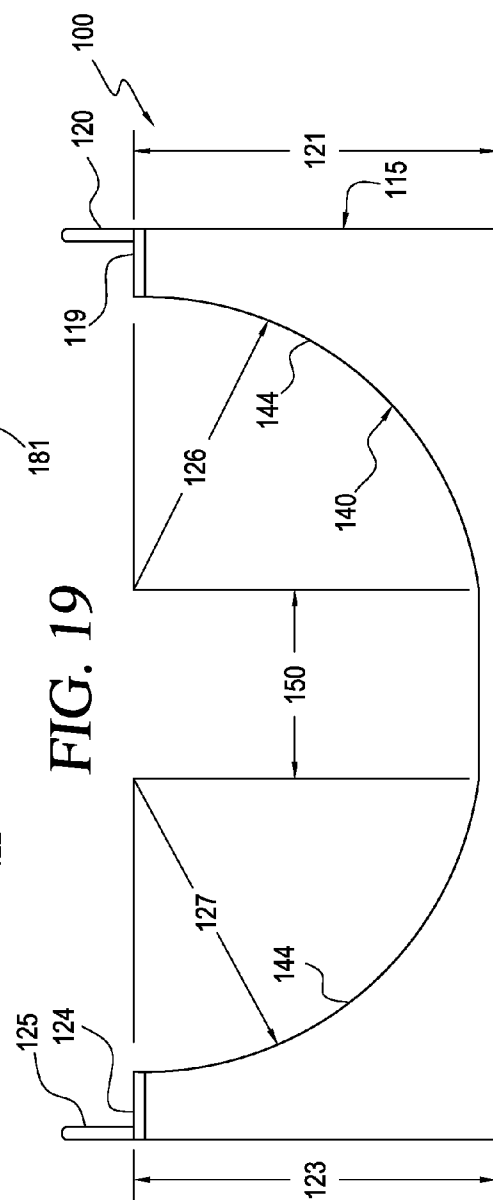
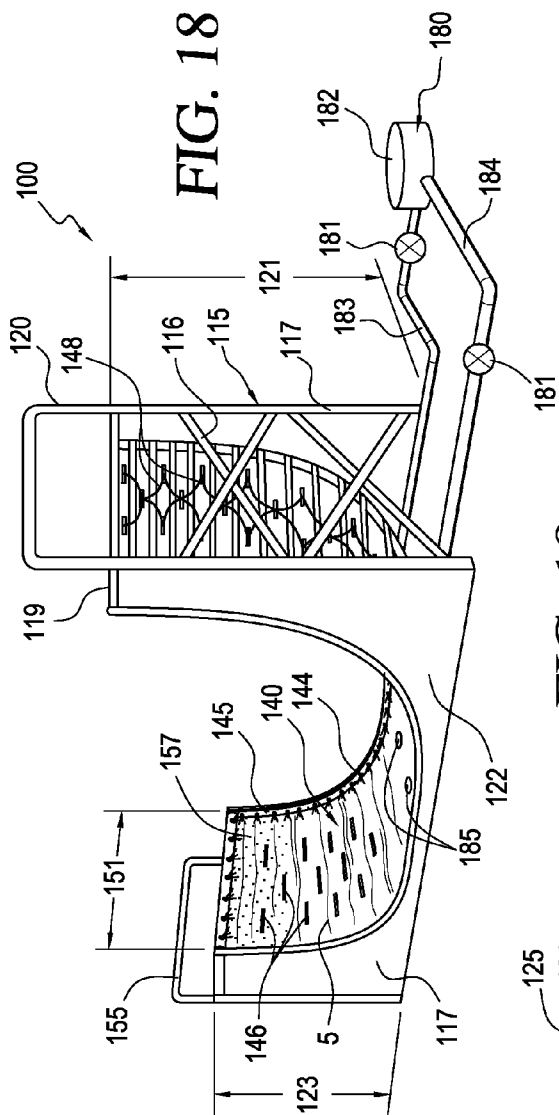


FIG. 16





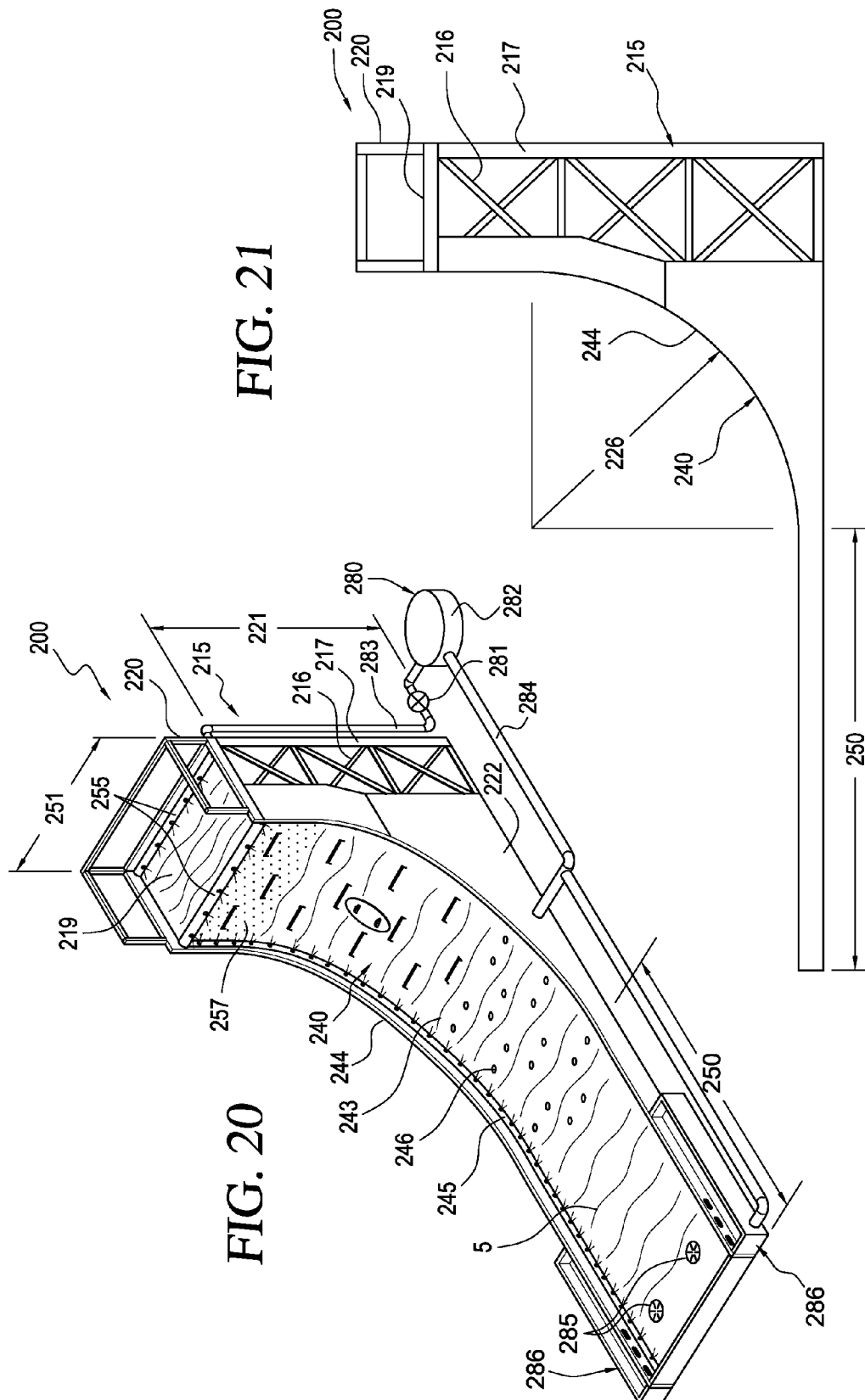
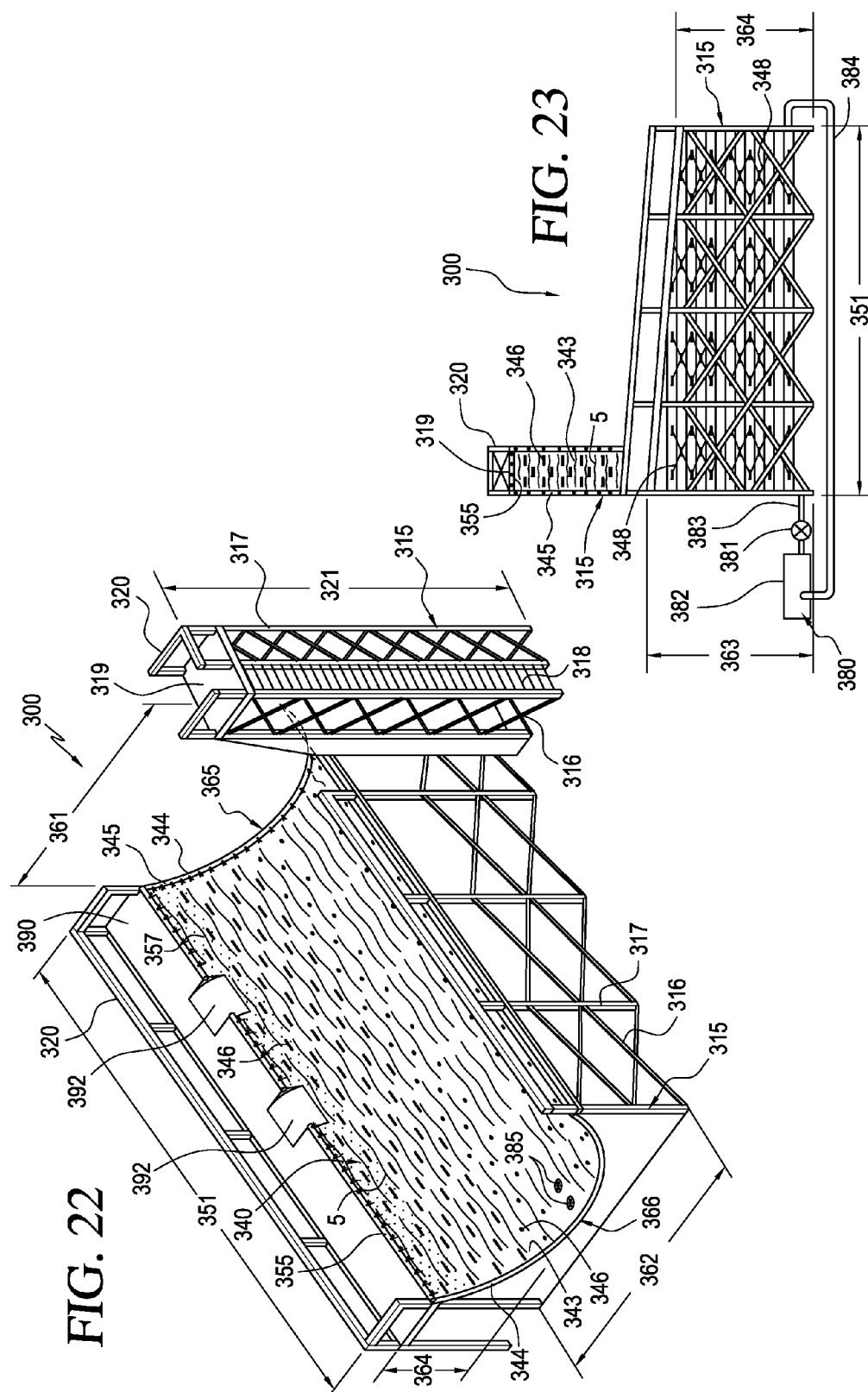
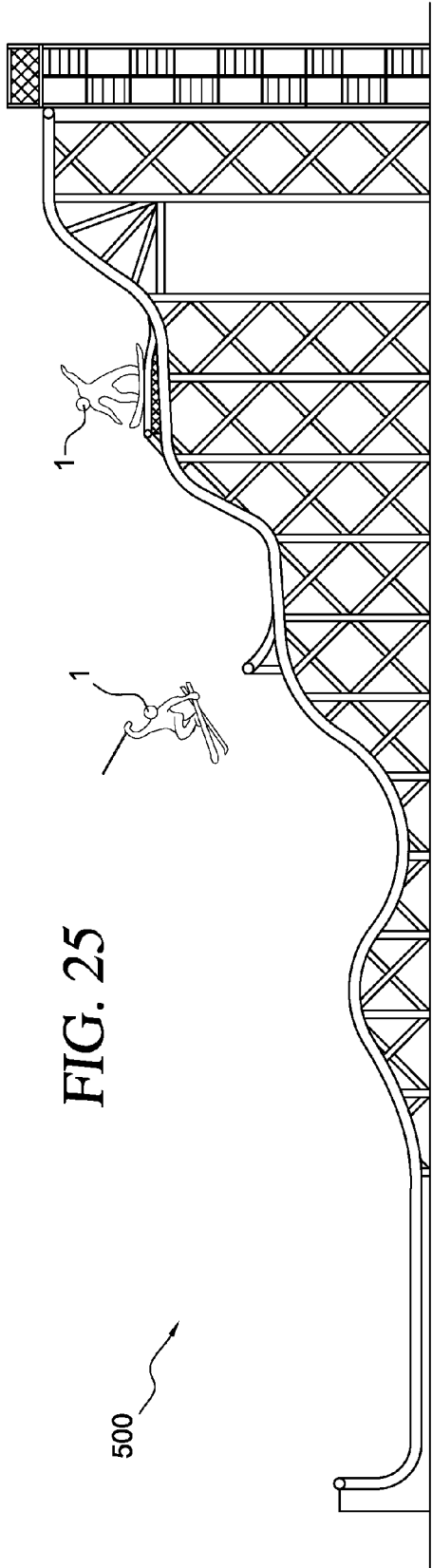
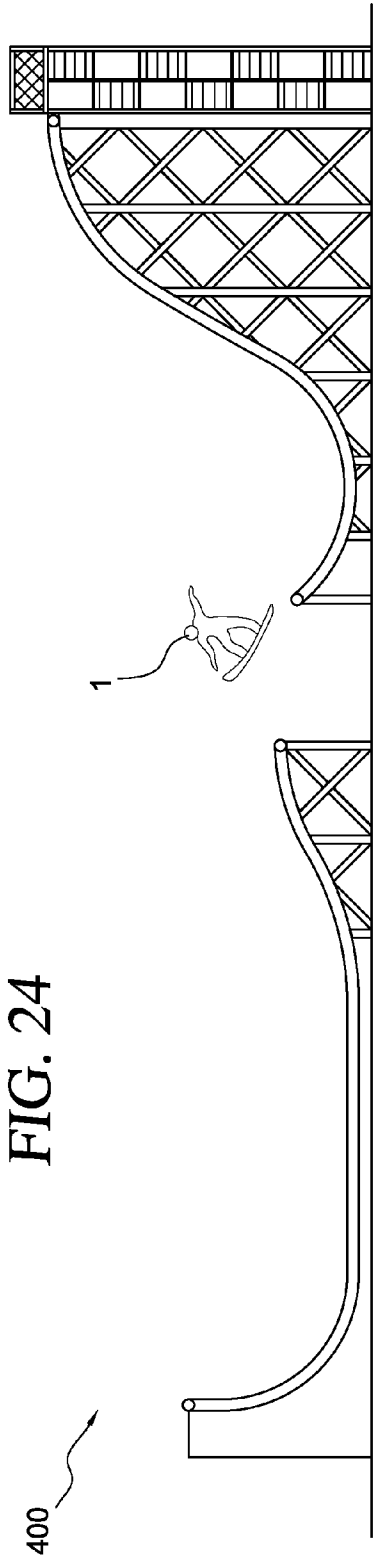


FIG. 21





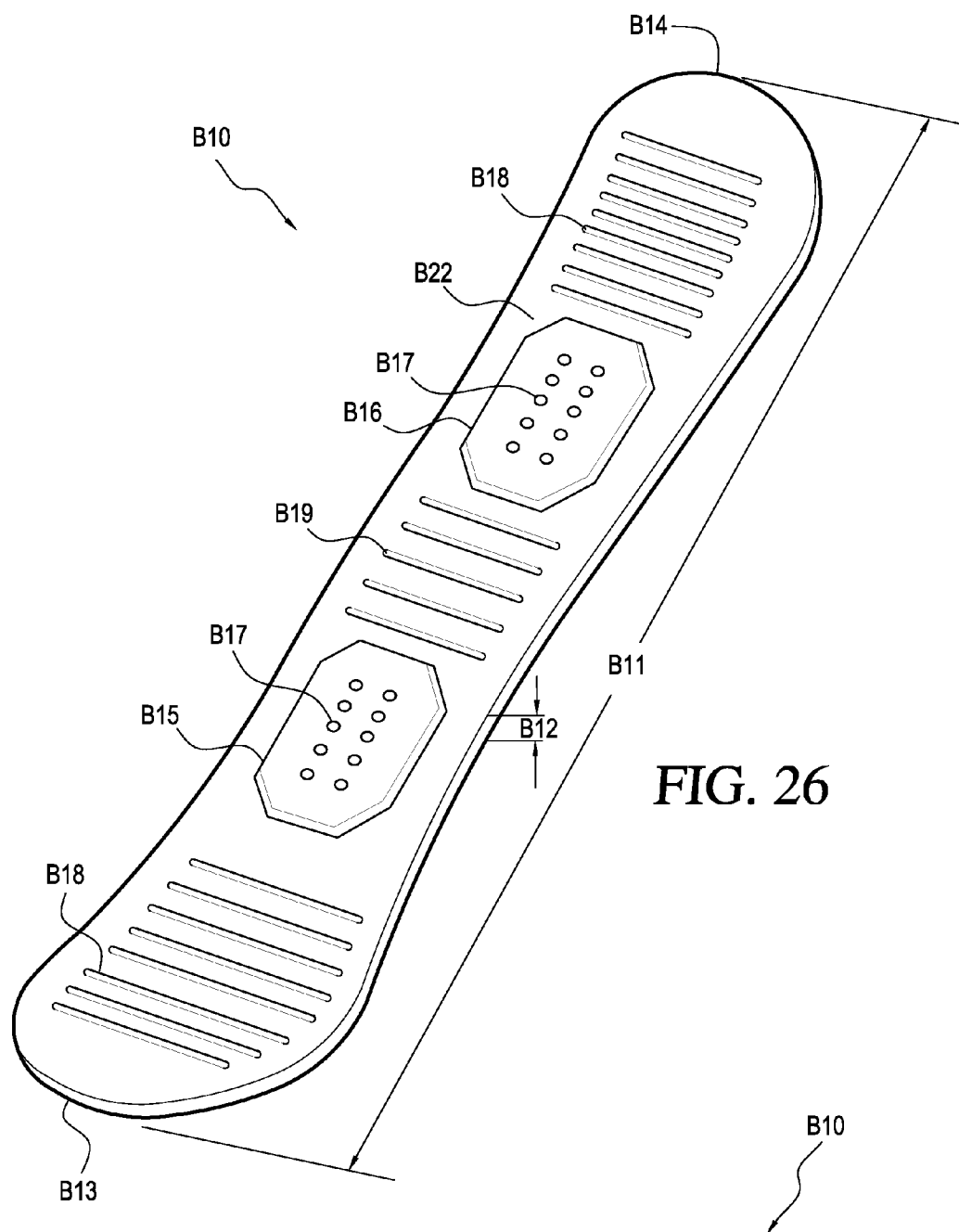


FIG. 26



FIG. 27

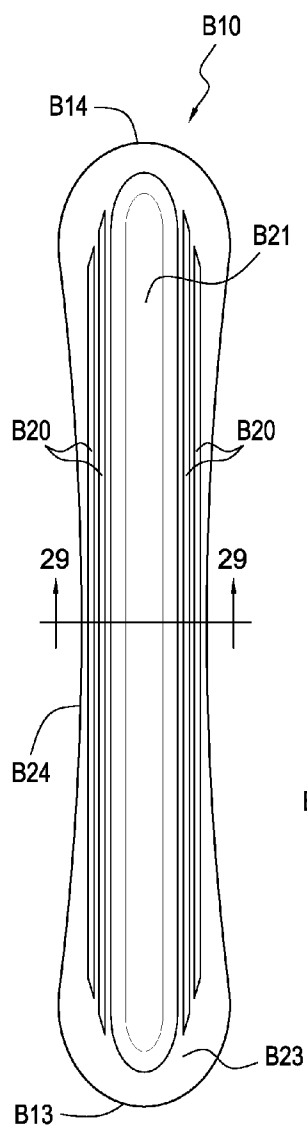


FIG. 28

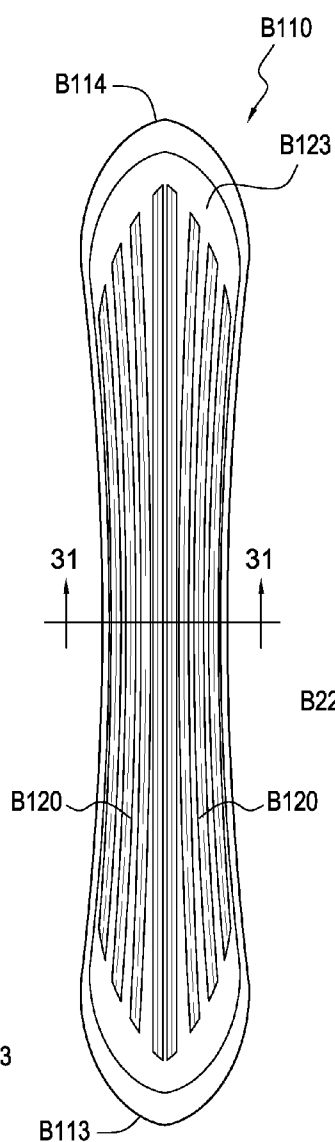


FIG. 30

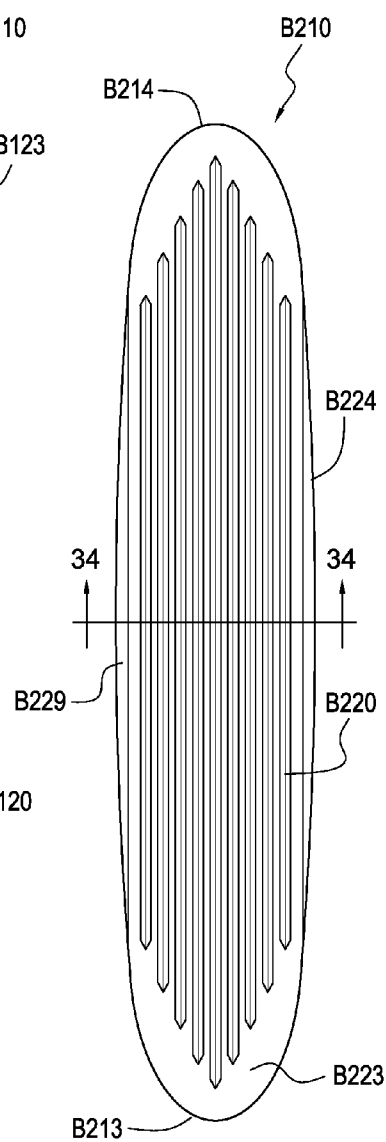


FIG. 33

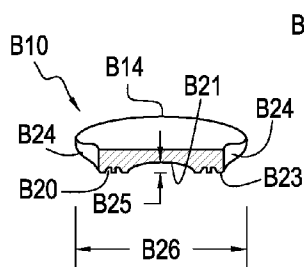


FIG. 29

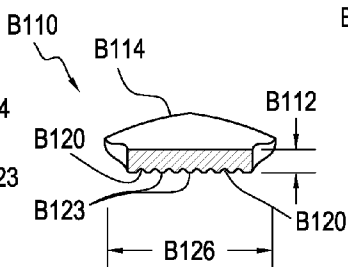


FIG. 31

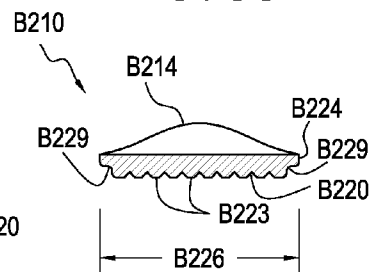


FIG. 34

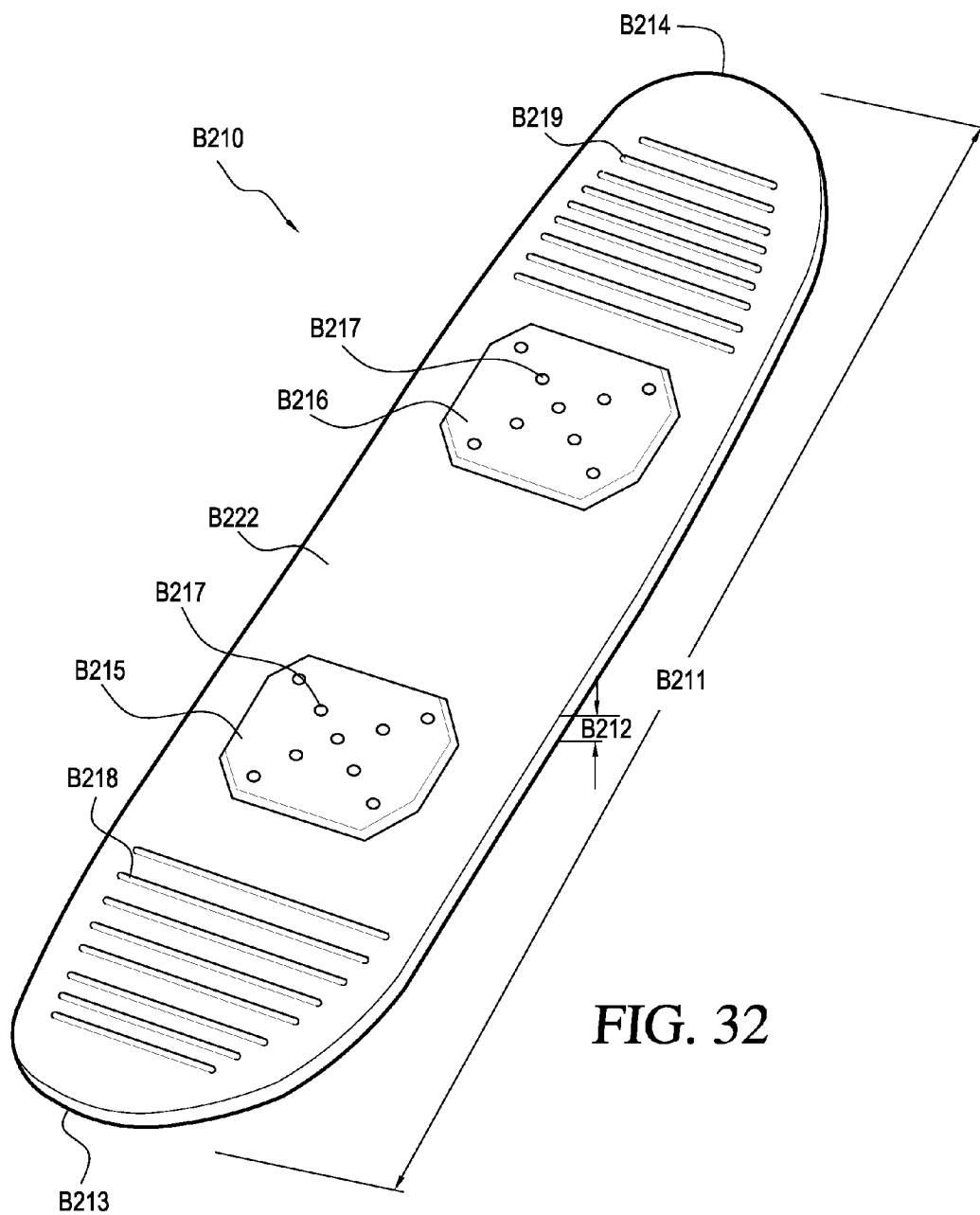


FIG. 32

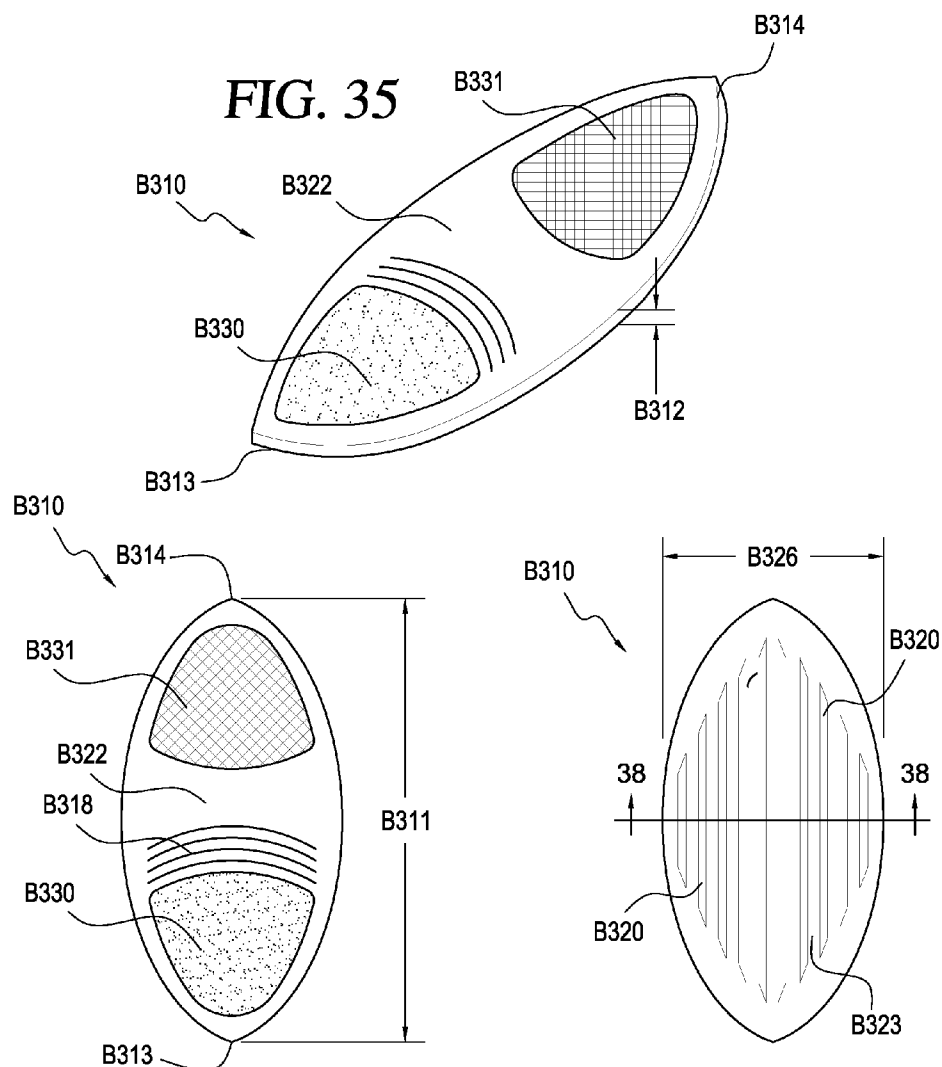


FIG. 36

FIG. 37

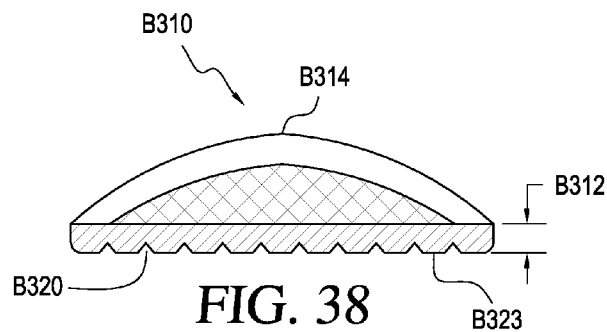


FIG. 38

FIG. 39

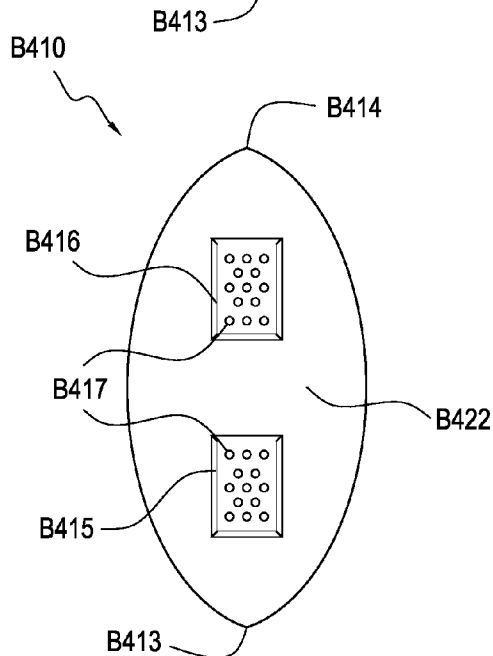
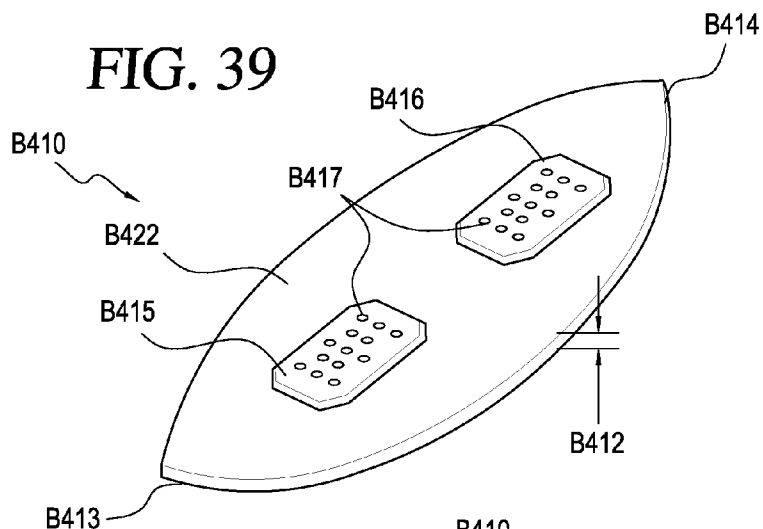


FIG. 40

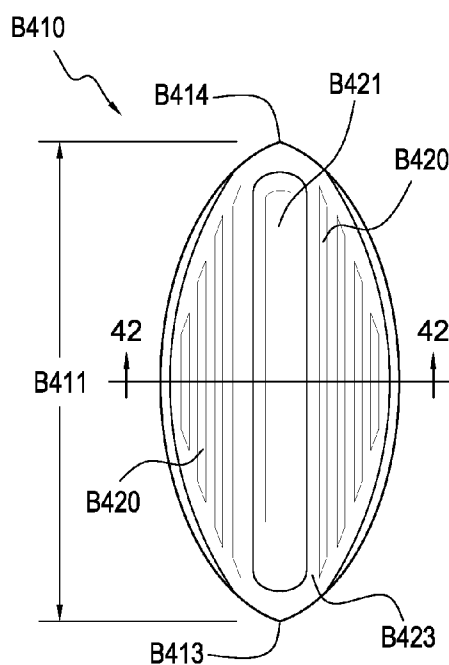


FIG. 41

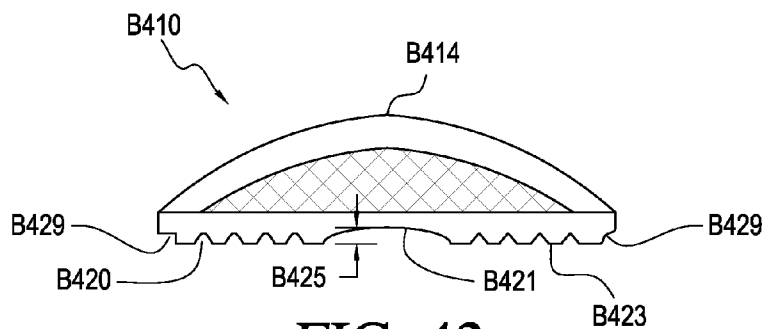


FIG. 42

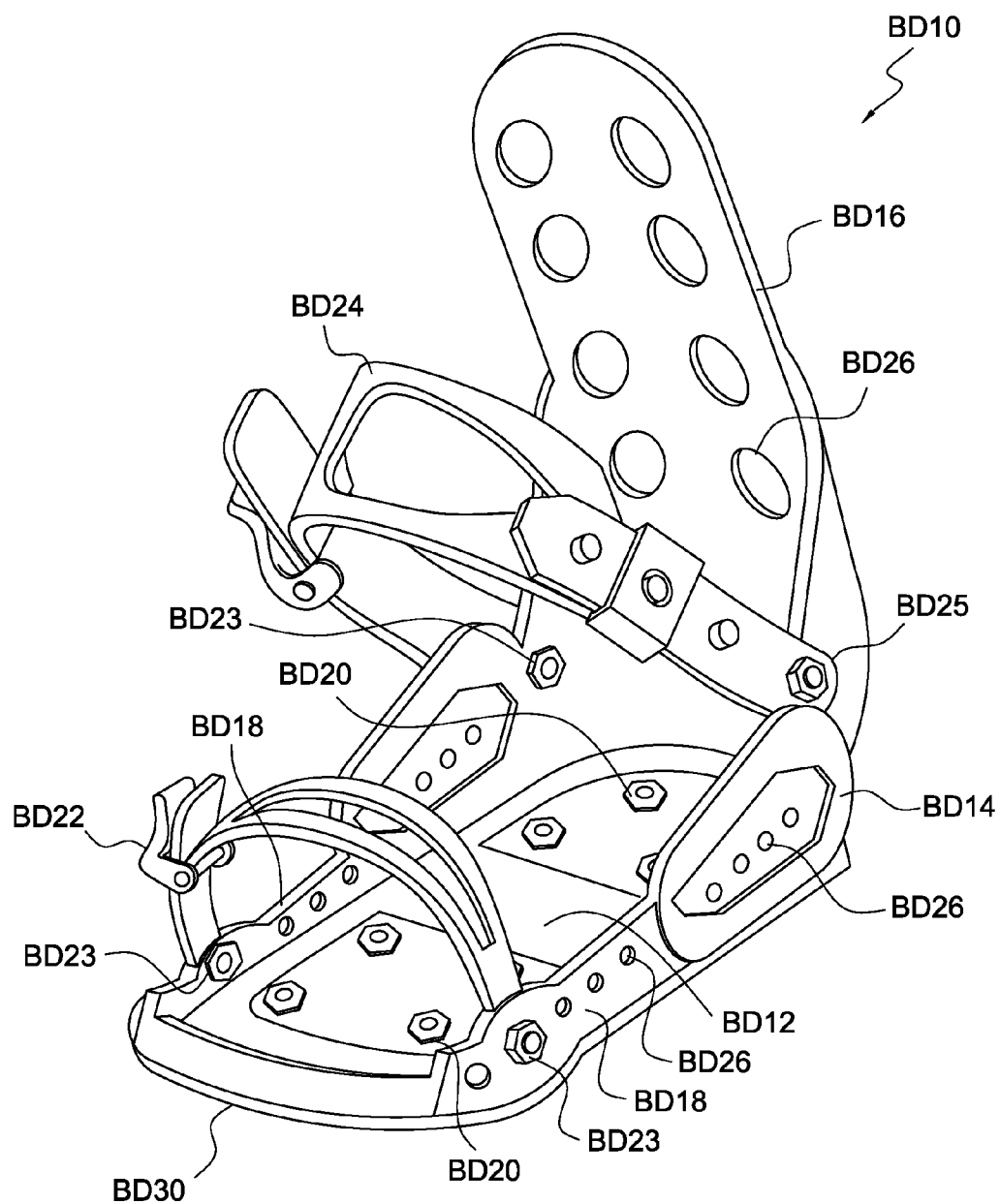


FIG. 43

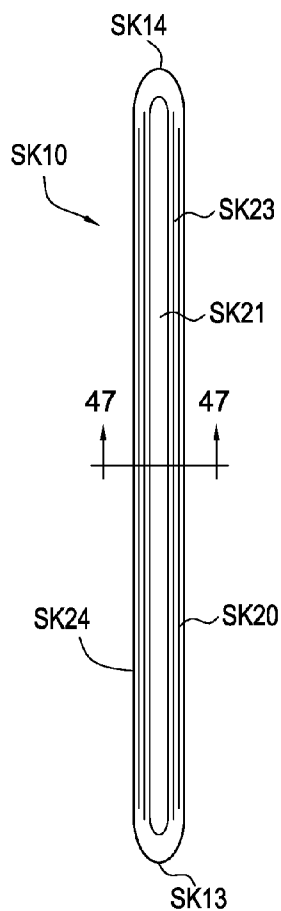
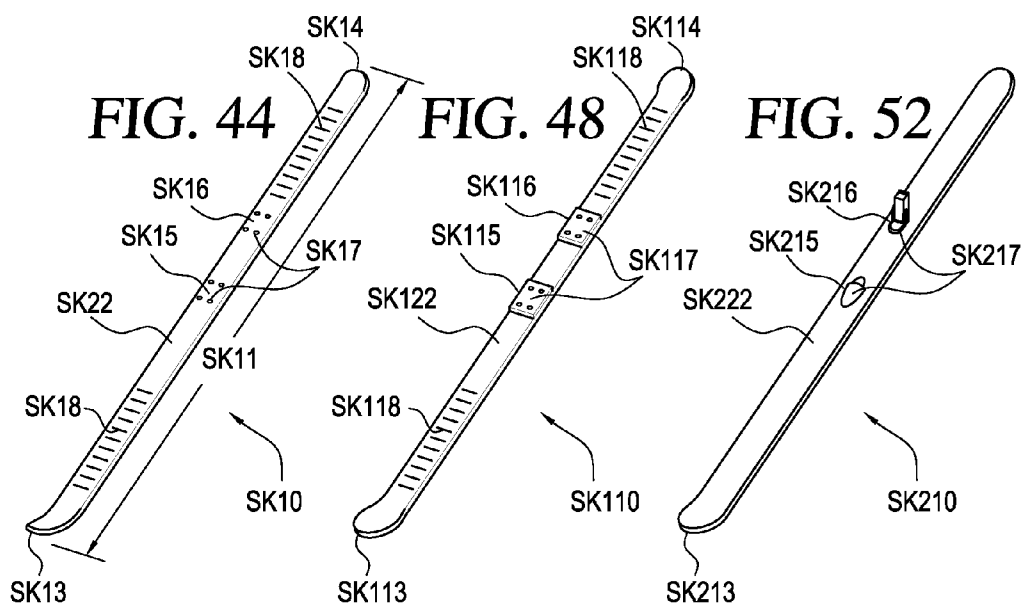


FIG. 45

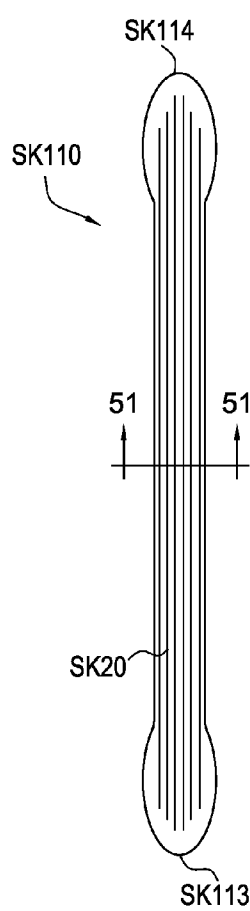


FIG. 49

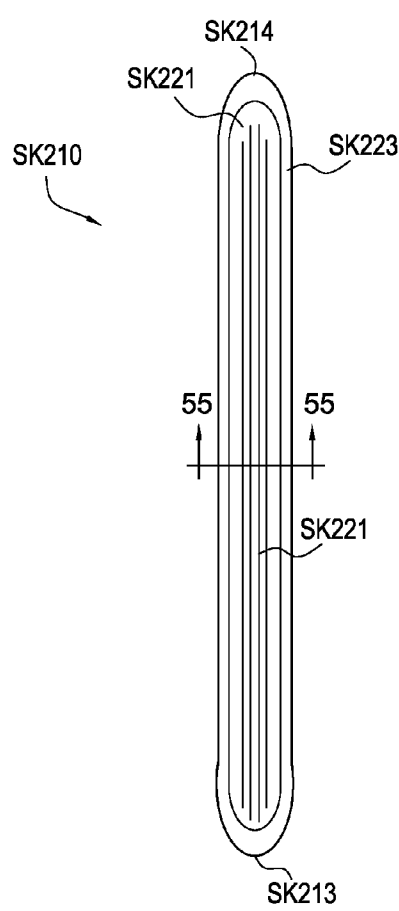


FIG. 53

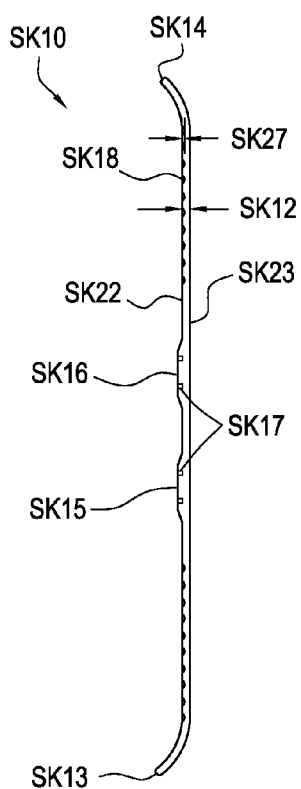


FIG. 46

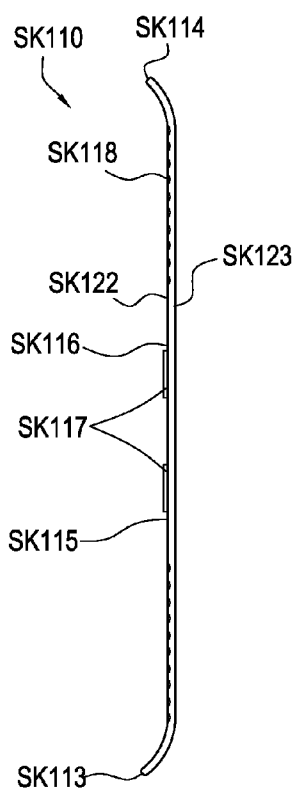


FIG. 50

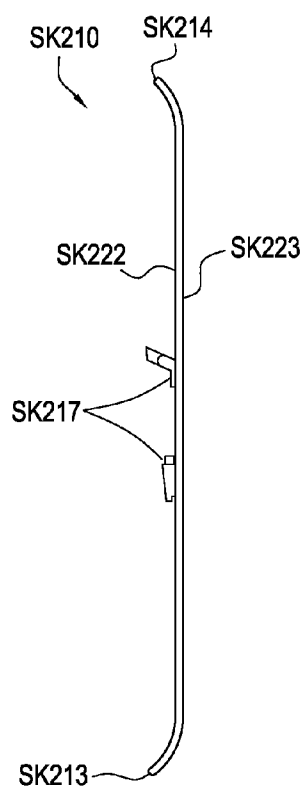


FIG. 54

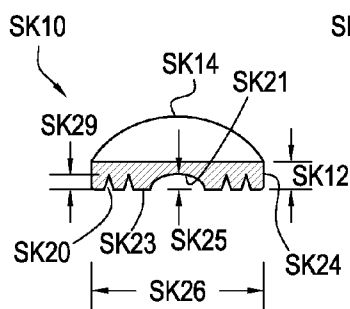


FIG. 47

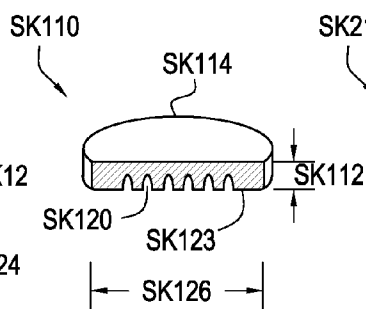


FIG. 51

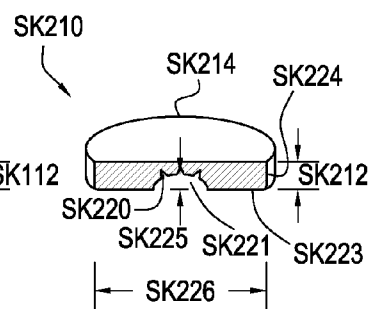


FIG. 55

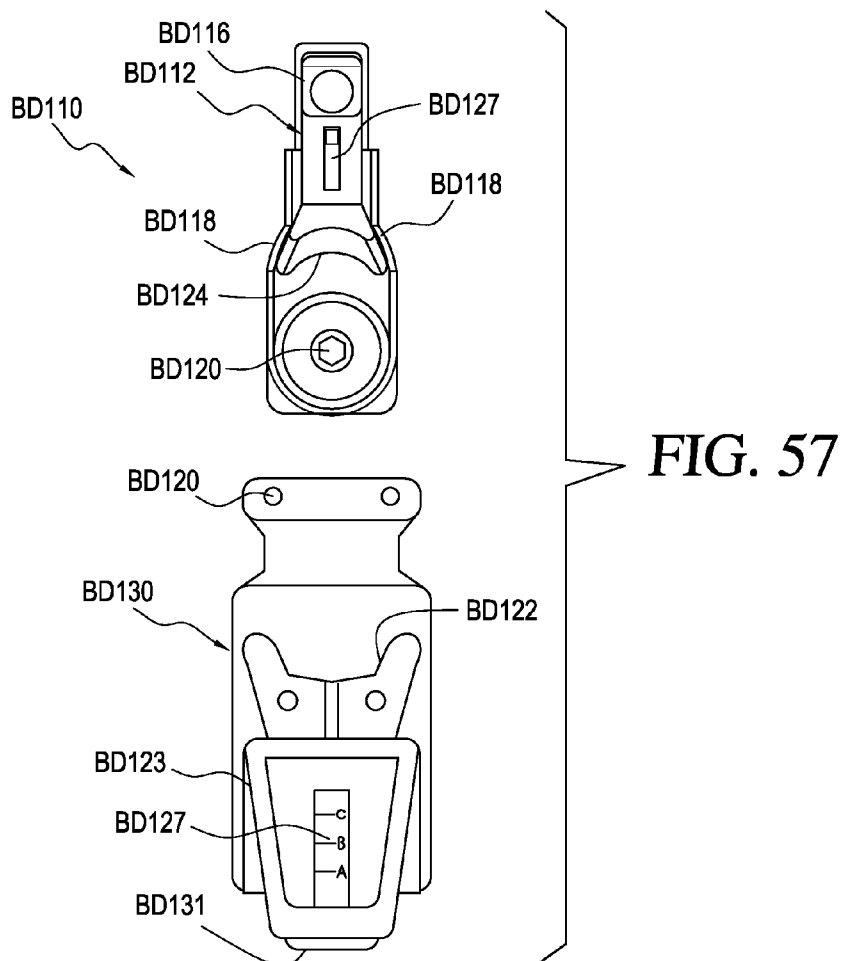
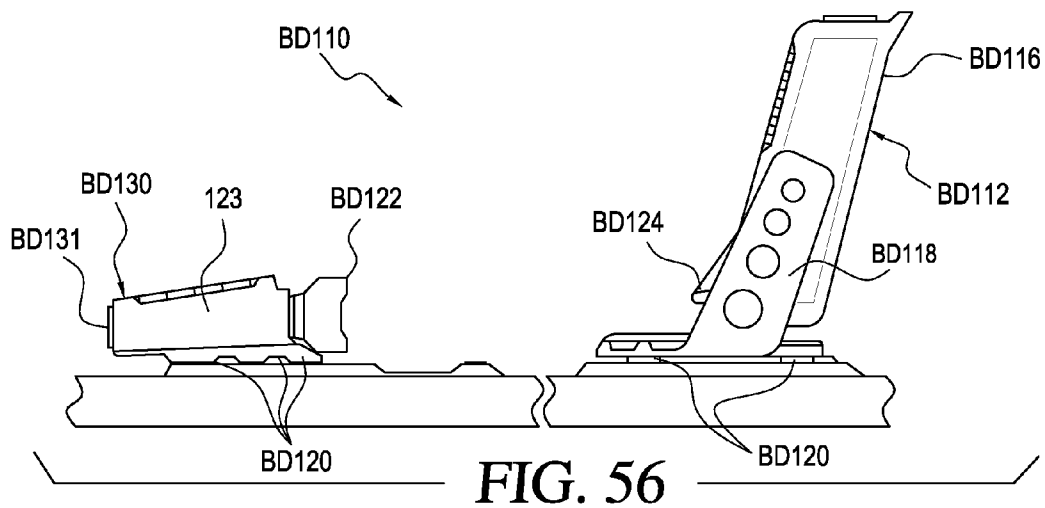


FIG. 58

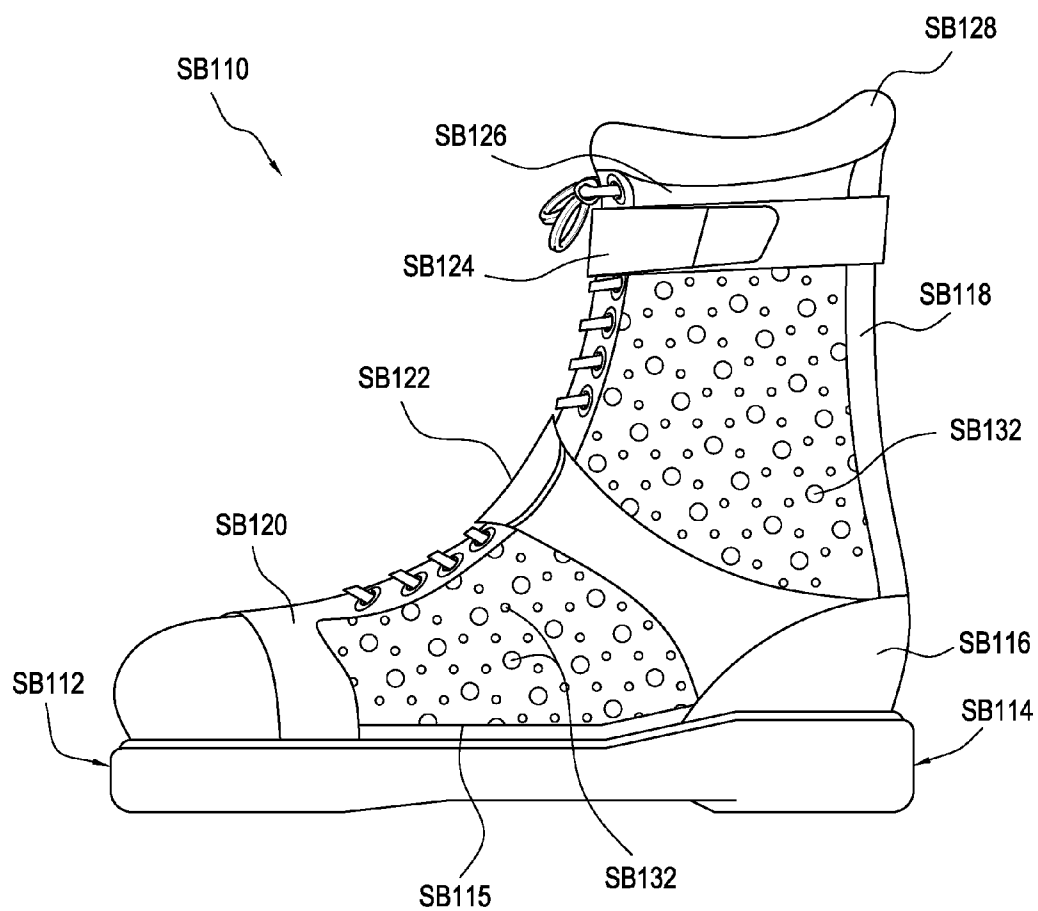
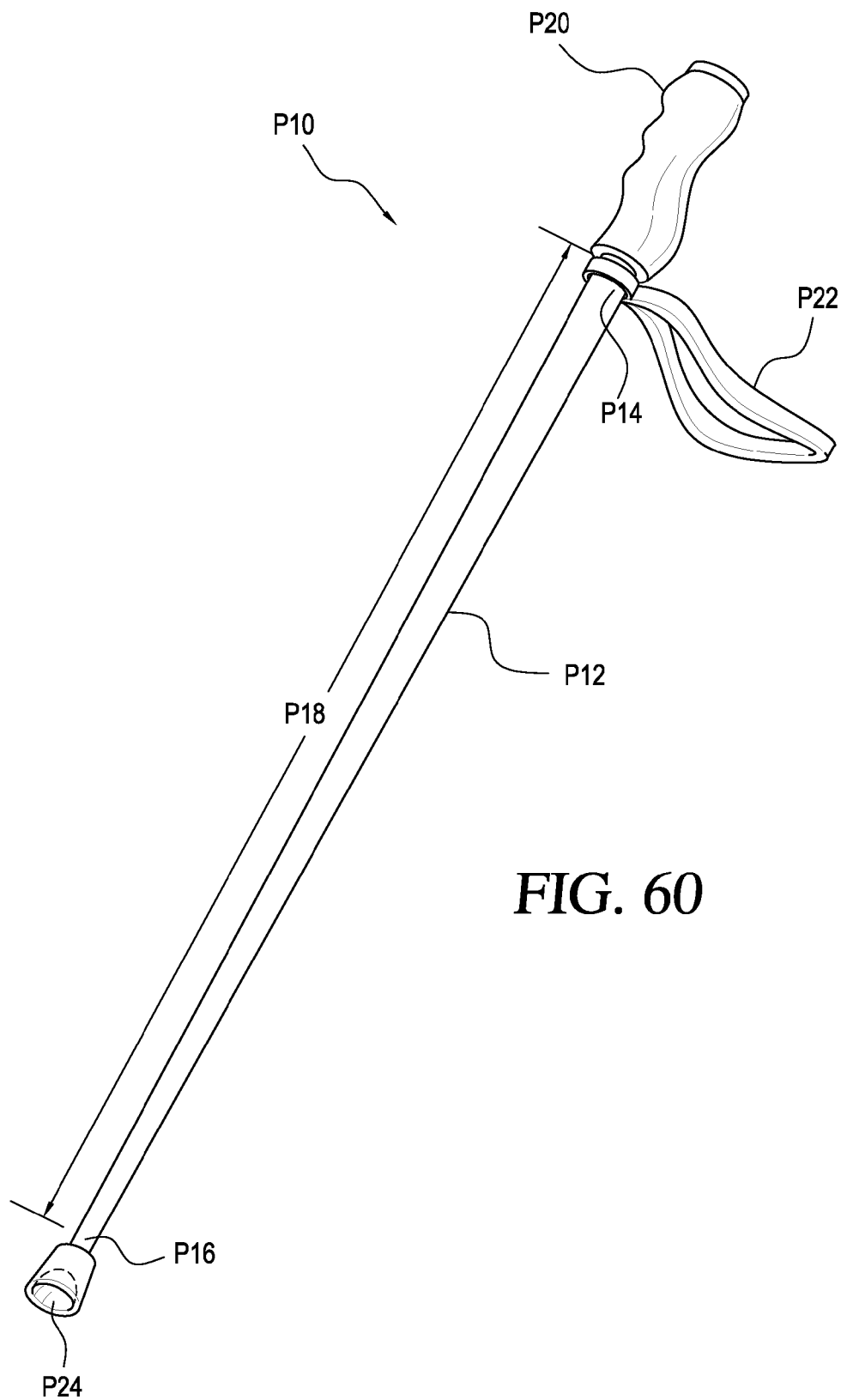


FIG. 59



HYDROPLANE SPORTING ENVIRONMENT AND DEVICES AND METHODS THEREFOR

CROSS REFERENCE TO RELATED APPLICATION

[0001] This nonprovisional application is a continuation application of and claims the benefit of application Ser. No. 12/126,847 filed on May 23, 2008, which is incorporated herein by reference in its entirety and to which priority is claimed. This application also claims the benefit of Provisional Application Nos. 60/931,554, 60/932,418, and 60/932,863 filed on May 23, 2007, May 30, 2007 and Jun. 1, 2007 respectively, with each theses applications being incorporated herein by reference in their respective entireties and to which priority is claimed.

BACKGROUND OF THE INVENTION

[0002] 1. Field of Invention

[0003] The present invention is related to the field of extreme action sports and more particularly hydroplaning water activity wherein a user or participant performs or executes extreme action sport maneuvers while skimming on a liquid and the equipment used therein.

[0004] 2. Description of Related Art

[0005] In the world of action or “extreme” sports, as featured in the Olympics, Winter X-Games, Summer X-Games, Gravity Games, Honda Ski Tour and AST Dew Action Sports Tour, athletes perform various tricks, stunts, maneuvers, and athletic abilities using various types of sporting equipment such as ramps, quarter pipes, half-pipes, boxes, jumps, rails, etc. The conventional environments for these action sports are performed on either dry surface area with wheeled sporting devices, in water environments such as ocean or lakes on wakeboards or wake skates, or on ski slopes in alpine skiing conditions with skis and snowboards. Conventional action or “extreme” sports lack the ability for users to perform action, big action, air, and substantially elevated air maneuvers on a surface with a continuous hydroplaning environment, and the equipment to perform these maneuvers. Further, conventional sports, devices and methods fail to provide equipment and an environment where a user can perform substantially elevated air and big air action sport skimming maneuvers on board and ski skimming devices wherein an artificial skimming surface is continuously provided, such as performed in skateboarding, snowboarding, and snow skiing big air, quarter pipe, half-pipe, and slope style activity. The present invention overcomes these limitations and drawbacks.

[0006] Conventional devises that provide a liquid type environment or water sport environment do exist in the form of waterslides and water chutes. In these conventional devices, a user is sliding down a tube or ramp device on their buttocks or on a riding device such as a mat, or an inflatable tube of some sort. With these conventional slides, the user slides down with the water pushing the user or the riding device down the ramp or chute. These conventional water slide devices fail to provide the proper substantially continuous hydroplane water environment for a user to perform action and big air maneuvers. Further, these conventional water devices fail to provide appropriate equipment enabling a user to ride in a substantially upright position so as to be able to properly perform action sport maneuvers in a hydroplane environment.

[0007] Current water sports include various activities wherein a user rides, stands or kneels upright on a piece of equipment to perform various athletic maneuvers. Such sports include for example water skiing, wake boarding, wake skating, surfing, ocean skim boarding and flatland skim boarding. These types of activities require wind, engine or wind powered marine vessels, waves, physical energy from users, generally on open bodies of water such as oceans, lakes or rivers. None of these activities provide an artificial environment wherein a hydroplaning surface is substantially provided on a continuous basis on devices and with equipment that enable a user to perform action, substantially elevated air, and big air, grinding, and sliding maneuvers. The present invention does provide such an artificial environment and equipment. Further, the present invention provides an artificial environment which provides kinetic energy (from gravity and users) that can be deployed on land, floating on water, which can be used in conjunction with open water, natural, artificial, man-made, or any combination thereof without the need for open bodies of water, waves or powered marine vessels.

[0008] Other conventional devices have tried to provide action sports and board riding experience on devices with an artificial environment. One example device is one that mimics the snow ski environment, as disclosed in U.S. Pat. No. 5,503,597 to Livermore. The Livermore patent discloses an artificial ski mat placed over a surface area, where snow skiing and snowboarding activities can be performed. The ski or snowboard comes in direct contact with the ski mat. Water is used as a lubricator for the mat surface. This conventional device fails to provide a substantially continuous hydroplane environment and equipment for users to perform action, substantially elevated air, and big air maneuvers.

[0009] Another example is U.S. Pat. No. 5,564,859 and U.S. Pat. No. 5,393,170 to Thomas J. Lochtefeld,—Method and apparatus for improving sheet flow water rides. The Lochtefeld patent discloses a device which creates a flow of water generated from propulsion pumps which allow for single and multiple participants. The participants perform various maneuvers on a flow of water much like ocean surfing, wherein the participant stays within a confined area of device, and in event of a fall, is pushed over back of device by propulsion of water flow. The Lochtefeld device forces a flow of water over a horizontal surface and then up an incline to provide a wave type environment for the participants. The Lochtefeld device requires a super-critical velocity propelled at the participant to maintain the balance of the participant. The device disclosed by Lochtefeld fails to provide an environment wherein gravity is the primary force that propels the riders through the device while hydroplaning.

[0010] To participate in conventional action “extreme” sports at the highest ability level requires year round training. Some conventional devices, like the Livermore device mentioned above, have attempted to provide an environment where athletes can practice year round. Athletes can travel to different parts of the world that have the right weather, temperature and other conditions to train. However, a lot of local athletes lack the funds to travel the world and conventional devices fail to provide the dynamic environment required to train for all the maneuvers required. The present invention overcomes these limitations.

[0011] Another aspect of the conventional art is the wake boarder and amateur skim boarder. These people use conventional ocean skim boards, conventional flatland skim boards,

conventional wake boards and other similar devices on shallow rivers or standing water. The users run and then jump on the conventional equipment to ride or skim across the surface of the shallow or standing water or are pulled behind a powered marine vessel. This type of amateur conventional activity fails to provide the required potential and kinetic energy required to execute extreme action sport maneuvers and substantially elevated air maneuvers on a hydroplane environment without the use of powered marine vessel or being pulled by a winch.

SUMMARY OF THE INVENTION

[0012] It is an object of the present invention to overcome the drawbacks and shortcomings of conventional action extreme sport devices and environments. This present invention provides for the devices and equipment for a person or extreme sport athlete to participate in water hydroplane action sport activities and maneuvers on a substantially continuous hydroplane surface, wherein the device does not require open bodies of water or for a user to be pulled by a power source such as a powered marine vessel or winch. It should be appreciated that the present invention can be used with or in conjunction with natural and artificial man-made open and closed bodies of water, such as pools, lakes, streams, rivers, ponds, and ocean, indoor and outdoor.

[0013] The present invention provides the environment and the potential and kinetic energy to participate in extreme action sport maneuvers on a liquid hydroplane environment on a surface disposed on land, floating on water, or in conjunction with open and closed bodies of water, natural and artificial.

[0014] The present invention provides the equipment for users to utilize so as to stand or kneel in an upright position to perform skimming, action, substantially elevated air, and big air maneuvers in a liquid hydroplane environment.

[0015] Further, an objective of the present invention is to provide an environment for extreme action sport athletes and users to participate, practice and train year round in a continuous hydroplane environment.

[0016] Additionally, the present invention provides a device that can be used in a variety of locations, including for example indoors, outdoors, backyards, arenas, stadiums, parks, and resorts, urban, suburban and rural, beach and mountain areas.

[0017] Further, the liquid hydroplane environment as disclosed in this invention, provides a method for the generation of revenue at designated locations in a new "branded" environment, such as a theme-park, sports complex, facility, or venue, or in already existing locations temporarily or permanently converted over to create liquid hydroplane environment for private personal use, commercial use, charitable events, entertainment, amusement, games and sporting events, participated in year round.

[0018] Another object of the present invention is to provide a liquid hydroplane environment device that is mobile and can be transported from one location to another with ease of transportability. In one such embodiment, the hydroplane environment is transported by a towing vehicle and trailer which has this hydroplane environment device temporarily attached for transportation to desired location. The hydroplane environment device is set-up for use by the participants. It should be appreciated that this invention also allows for a liquid hydroplane environment to be permanently attached to a mobile primary vehicle, towing vehicle, or trailer, or any

combination thereof which is then transported to a location and set-up for use by participants. It should also be appreciated that the mobile unit can be used in conjunction with various liquid hydroplane environment devices as disclosed in this invention which are placed permanently, temporarily, or both, with use in natural, artificial or combination bodies of water.

[0019] Another object of the present invention is to provide liquid hydroplane environment modular units that provide a liquid hydroplane environment, which user, athlete, or rider utilizes as described in this invention to perform various "extreme" action sport maneuvers, air, substantially elevated air, and big air maneuvers. The liquid hydroplane environment modular units can be of a multi-piece construction or unitary injection molded, which has either an internal or external plumbing system. The liquid hydroplane environment modular unit can be used in singular or plural, which are mated together in various configurations such as "tile" or "end-to-end" formations. Liquid hydroplane environment modular units can be support with conventional support systems and structures made from wood, metal, concrete, scaffolding, or laid over other sufficient support such as land, concrete, or already existing conventional action sport devices such as used for skateboarding, snowboarding, and snow skiing. Further, liquid hydroplane environment modular units can be constructed or injection molded in various shapes and sizes to provide liquid hydroplane environment embodiments such as halfpipe, quarterpipe, big air, slope-style, stair-step cascading, jump, slope, or ramp where user can perform various "extreme" action sport maneuvers.

[0020] The present invention also provides various articles of equipment for use in the liquid hydroplane environment. The hydroplane equipment includes skim skis, boards, bindings, boots, and poles, helmets, upper body protection, lower body protection, foot wear, hand wear, and eye wear.

[0021] The present invention further provides a hydroplaning device for a rider on hydroplane equipment to perform liquid sport athletic maneuvers, comprising: a support member having a height relative to the ground and a slope; a surface member disposed on the support member along the slope, wherein the surface member forms at least an angled surface and a catchment area; a liquid circulation system, having a liquid source having a liquid, at least one feed line and at least one return line, the liquid source being in fluid communication with the at least one feed line and the at least one return line being in fluid communication with at least one of the liquid source and a disposal location; at least one liquid dispenser disposed adjacent to at least one of the support member and the surface member, the at least one liquid dispenser being in fluid communication with the at least one feed line; at least one drain disposed at least one of adjacent to and within the catchment area of the surface member and being in fluid communication with the at least one return line; and, wherein when the device is in use the liquid from the liquid source will flow through the at least one feed line, out the at least one liquid dispenser, down the angled surface at a sufficient rate so as to create a hydroplane layer of liquid on the angled surface to the catchment area, through the at least one drain and to the at least one return line, and wherein the rider while on the hydroplane equipment will hydroplane on the hydroplane layer as gravity pulls the rider down the angled surface.

[0022] The present invention yet further provides a device for creating a hydroplane skim surface for allowing a rider to

hydroplane on hydroplane equipment, comprising: a surface member having an angle relative to the ground; at least one liquid dispenser adjacent on the surface member; and a liquid feed being in fluid communication with the at least one liquid dispenser, wherein when the hydroplane surface device is in use, liquid from the liquid feed will flow through the at least one liquid dispenser, down the surface member at a sufficient rate so as to create a hydroplane layer of liquid on the surface member, and wherein the rider while on the hydroplane equipment will skim on the hydroplane layer as gravity pulls the rider down the surface member.

[0023] The present invention still further provides an extreme action sport method comprising the steps: acquiring a hydroplane environment device having at least an angled surface; flowing a liquid over the angled surface of the hydroplane environment device to create a continuous hydroplane surface acquiring hydroplane sports equipment for use on the hydroplane environment device; fitting a rider with the hydroplane sports equipment; and, disposing the rider at an elevated portion of the angled surface of the hydroplane environment devices and allowing gravity to pull the rider down the hydroplane environment device such that the rider hydroplanes on top of the continuous hydroplane surface with the hydroplane sports equipment.

[0024] The present invention provides a hydroplane board comprising: a board member having a first end, a second end defining a length, a thickness, a first surface and a second surface, wherein the first end and the second end have a bend in the direction from the second surface towards the first surface; and, a plurality of flexibility grooves disposed on the first surface, near the first end and generally perpendicular to the length.

[0025] The present invention further provides a hydroplaning riding device for a rider to hydroplane upon a liquid surface, comprising: an elongated member having a first end, a second end defining a length, a thickness, a first surface and a second surface, wherein the first end and the second end have a bend in the direction from the second surface towards the first surface, wherein the second surface when in use is operably configured to hydroplane upon the liquid surface; and, a plurality of grooves disposed on the second surface and being generally parallel to the length of the elongated member. The riding device can be a ski or a board.

[0026] The present invention also provides a binding device for use on a board to secure a rider to the board for use in a water hydroplane environment, comprising: a sole portion having a first end and a second end, which includes a plurality of fastener orifices; two side portions attached to the sole portion; a heel portion attached to the second end and the two side portions; a calf portion rotatably attached to the heel portion; a first securing member attached to the two side portions near the first end; a second securing member attached to the two side portions near the heel portion; a third securing member attached to the calf portion; and, wherein the sole portion, two side portions, heel portion and calf portion include a plurality of orifices to reduce weight and when in use to allow the water to drain through out of the binding device.

[0027] The present invention still further provides a ski boot for in use in a water hydroplane environment, for locking into a ski binding, comprising: a shell member; an insert to removably fit inside the shell member; a toe end and a heel end, operably configured to engage the ski binding; wherein

the shell member includes a plurality of orifices to reduce weight and when in use allow the drainage of the water.

[0028] These and other features and advantages of this invention are described in, or are apparent from, the following detailed description of various exemplary embodiments of the devices and methods according to this invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0029] Various exemplary embodiments of this invention will be described in detail, with reference to the following figures, wherein;

[0030] FIG. 1A is a perspective view of a hydroplane environment device made in accordance with this invention;

[0031] FIG. 1B is a schematic outline of the hydroplane surface of the hydroplane environment device made in accordance with the present invention of FIG. 1A;

[0032] FIG. 2 is a side view of the device of FIG. 1A;

[0033] FIG. 3 is a cross-sectional view of a surface area of the device in FIG. 1A taken along line 3-3 in FIG. 1A;

[0034] FIG. 4 is cross-sectional view of the surface area of the device in FIG. 1A taken along line 4-4 in FIG. 3;

[0035] FIG. 5 is cross-sectional view of an alternative embodiment of the surface area shown in FIG. 3;

[0036] FIG. 6 is a cross-sectional view of the surface area shown in FIG. 5 taken along line 6-6 in FIG. 5;

[0037] FIG. 7 is a cross-sectional view of another alternative embodiment of the surface area shown in FIG. 3;

[0038] FIG. 8 is a cross-sectional view of the surface area shown in FIG. 7 taken along line 8-8 in FIG. 7;

[0039] FIG. 9A is a detailed front view of the surface area of the device in FIG. 1A;

[0040] FIG. 9B is a detailed back view of the detailed front view of the surface area of FIG. 9A of the device in FIG. 1A;

[0041] FIG. 10 is a detail of the circle A in FIG. 9A presenting detail of the surface area of the device in FIG. 1A;

[0042] FIG. 11 is a detailed of the ellipse B in FIG. 9A, presenting a side view of a dispensing portion of the device in FIG. 1A;

[0043] FIG. 12 is a cross-sectional view of the dispensing portion of FIG. 11 taken along line 12-12 in FIG. 11;

[0044] FIG. 13 is a detailed of the circle C in FIG. 1A, presenting a perspective detailed view of the dispensing portion of the device in FIG. 1A;

[0045] FIG. 14 is a perspective view of a jump module hydroplane environment device made in accordance with this invention;

[0046] FIG. 15 is a detailed of the circle D in FIG. 14, presenting a perspective detailed view of a dispensing portion of the device in FIG. 14;

[0047] FIG. 16 is a perspective view of a landing module hydroplane environment device made in accordance with this invention;

[0048] FIG. 17 is a perspective view of a box module hydroplane environment device made in accordance with this invention;

[0049] FIG. 18 is a perspective view of a half-pipe hydroplane environment device made in accordance with this invention;

[0050] FIG. 19 is a side view of the half-pipe hydroplane environment device of FIG. 18;

[0051] FIG. 20 is a perspective view of a quarter pipe hydroplane environment device made in accordance with this invention;

[0052] FIG. 21 is a side view of the quarter pipe hydroplane environment device of FIG. 20;

[0053] FIG. 22 is a perspective view of a half-frustum conical hydroplane environment device made in accordance with this invention;

[0054] FIG. 23 is a side view of the half-frustum conical hydroplane environment device of FIG. 22;

[0055] FIG. 24 is a side view of an alternative embodiment of the a hydroplane environment device made in accordance with this invention;

[0056] FIG. 25 is a side view of an another alternative embodiment of a hydroplane environment device made in accordance with this invention;

[0057] FIG. 26 is a perspective view of a skim board device made in accordance with this invention for use on hydroplaning devices made in accordance with this invention;

[0058] FIG. 27 is a side view of the skim board device of FIG. 26;

[0059] FIG. 28 is a bottom view of the skim board device of FIG. 26;

[0060] FIG. 29 is a cross-section view of the skim board device of FIG. 26, taken along line 29-29 in FIG. 28;

[0061] FIG. 30 is a bottom view of an alternative embodiment of a skim board device made in accordance;

[0062] FIG. 31 is a cross-section view of the skim board device of FIG. 30, taken along line 31-31 in FIG. 30;

[0063] FIG. 32 is a perspective view an another alternative embodiment of a skim board device made in accordance with this invention;

[0064] FIG. 33 is a bottom view of the skim board device of FIG. 32;

[0065] FIG. 34 is a cross-section view of the skim board device of FIG. 32, taken along line 34-34 in FIG. 33;

[0066] FIG. 35 is a perspective view of still another alternative embodiment of a skim board device made in accordance with this invention;

[0067] FIG. 36 is a top view of the skim board device of FIG. 35;

[0068] FIG. 37 is a bottom view of the skim board device of FIG. 35;

[0069] FIG. 38 is a cross-section view of the skim board device of FIG. 35, taken along line 38-38 in FIG. 37;

[0070] FIG. 39 is a perspective view of still another alternative embodiment of a skim board device made in accordance with this invention;

[0071] FIG. 40 is a top view of the skim board device of FIG. 39;

[0072] FIG. 41 is a bottom view of the skim board device of FIG. 39;

[0073] FIG. 42 is a cross-section view of the skim board device of FIG. 39, taken along line 42-42 in FIG. 41;

[0074] FIG. 43 is a perspective view of a binding device for use on the skim board of FIG. 26, made in accordance with this invention;

[0075] FIG. 44 is a perspective view of a skim ski device made in accordance with this invention for use on the device 10 of FIG. 1A;

[0076] FIG. 45 is a bottom view of the skim ski device of FIG. 44;

[0077] FIG. 46 is a side view of the skim ski device of FIG. 44;

[0078] FIG. 47 is a cross-section view of the skim ski device of FIG. 44, taken along line 47-43 in FIG. 45;

[0079] FIG. 48 is a perspective view of an alternative embodiment of a skim ski device made in accordance with this invention;

[0080] FIG. 49 is a bottom view of the skim ski device of FIG. 48;

[0081] FIG. 50 is a side view of the skim ski device of FIG. 48;

[0082] FIG. 51 is a cross-section view of the skim ski device of FIG. 48, taken along line 51-51 in FIG. 49;

[0083] FIG. 52 is a perspective view of an alternative embodiment of a skim ski device made in accordance with this invention;

[0084] FIG. 53 is a bottom view of the skim ski device of FIG. 52;

[0085] FIG. 54 is a side view of the skim ski device of FIG. 52;

[0086] FIG. 55 is a cross-section view of the skim ski device of FIG. 52, taken along line 55-55 in FIG. 53;

[0087] FIG. 56 is a side view of an alternative embodiment of a binding device for use on the skim ski of FIG. 44, made in accordance with this invention;

[0088] FIG. 57 is a top view of the binding device of FIG. 56;

[0089] FIG. 58 is a side view of a boot device for use in the binding device of FIG. 56, made in accordance with this invention;

[0090] FIG. 59 is a side view of an alternative embodiment of a boot device for use in the binding device of FIG. 43, made in accordance with this invention; and,

[0091] FIG. 60 is a perspective view of a balance pole for use in the hydroplane environment made in accordance with this invention.

DETAILED DESCRIPTION

[0092] When one thinks of extreme actions sports with users standing and performing maneuvers on a board or ski, some sports such as skateboarding, snowboarding, snow or water skiing, or flatland skim boarding come to mind. Other terms or features may also come to mind like, ramps, half-pipes, quarter pipes, bowls, jumps, rails, and such. The above mentioned conventional extreme action sports all require their own environment. A skateboard at a concrete or wooden skate park, snowboarders and snow skiers, a snow covered mountain, wake boarders and water skiers require a lake.

[0093] The present invention creates an entirely new sport having an entirely new environment and equipment. This new environment is a hydroplane environment, wherein a liquid, flows over a surface area at a controlled rate and depth. A user or rider, dons equipment, such as skis or a board, including equipment made in accordance with the present invention and described below. The user skims or hydroplanes on a surface of the present invention, wherein the user is generally skimming on a thin layer of liquid.

[0094] FIG. 1A is a perspective view of an embodiment for an extreme action hydroplaning device 10, made in accordance with the present invention. As shown in FIGS. 1A and 2, the extreme action hydroplaning device 10 comprises a support member or structure 15, a surface member 40, and a liquid 5 circulation system 80. The support structure 15 in the present embodiment is a conventionally constructed support structure to provide height or potential energy to a user or rider 1. The support structure 15 is a connection of a plurality of support braces 16 and posts 17 using conventional construction techniques. The support structure 15 further

includes a ladder **18**, platform **19** and safety rail **20**. While the ladder **18** in the present embodiment provide access for the rider **1** to the platform **19**, it should be appreciated that in other various exemplary embodiments, platform access can be achieved by various means such as steps, stairs, elevators, lifts systems, the ground and the like.

[0095] The support structure **15** in the present embodiment is constructed out of wood. However, it should be appreciated that in other various exemplary embodiments, the support member could be constructed out of metal, plastics, concrete or composites, or any combination thereof, as is common in the art. Further, in other various exemplary embodiments, the support member could be a downhill gradient of earth, such as a ski slope, or already existing conventional action sports device used for skateboarding or bicycle motocross (BMX). It should also be appreciated that the support structure in other embodiments is other types of support, such as scaffolding or the like. Further, in other exemplary embodiments, the support structure is mounted to mobile vehicles, such as trucks and trailers. In these mobile embodiments, the other components of the action hydroplaning device would be included on or transported by the mobile vehicles.

[0096] The support structure **15** in the present embodiment, is a downhill ramp that includes a height **21**. It should be appreciated that in various other exemplary embodiments, the support structure could present other configurations, such as a half-pipe, quarter pipe, a bowl, jumps or landing ramp, for example, some of which will be discussed latter. The support structure can include various modules, such as ramps, half-pipes, quarter pipes, bowls, jumps, flat surfaces, etc., that are combined together to form more complex arrangements of structures. It should also be appreciated that in other various exemplary embodiments the device **10** and support structure **15** can be configured in various heights, combinations, and configurations above ground, in ground, or any combination thereof, and also in accordance with user preference, extreme hydroplane sport discipline, or other preference. It should be appreciated that invention embodiments can be made in smaller sizes to be used as toys or decorations utilizing figurines or dolls.

[0097] The support structure **15** provides the potential energy for the rider **1** by way of the height **21**. The rider **1** translates the potential energy into kinetic energy by hydroplaning down the surface member **40** and uses the kinetic energy to execute extreme action sport maneuvers, as will be discussed below.

[0098] The liquid circulation system **80** includes pumps **81**, a liquid supply **82**, plumbing supply lines **83**, plumbing return lines **84**, a plurality of drains **85** and a plurality of liquid feeds **86**. In the present embodiment, the supplies lines **83** and return lines **84** are conventional polyvinyl chloride (PVC) material. However, it should be appreciated that in other various exemplary embodiments the supply and return lines could be of other material as is common in the art. The pump **81** takes the liquid **5** from the liquid supply **82** and via the supply lines **83** feeds the liquid **5** to the plurality of liquid feeds **86** disposed on the surface member **40**. In this embodiment, two pumps **81** are shown, one on the supply side of the liquid circulation system and one on the return side. It should be appreciated that the return side pump is optional, but is preferred to be used if the supply source is level or higher than the catchment area and drains. The liquid circulation system **80** provides the liquid **5** to the surface member **40** to maintain a hydroplane environment on the surface member **40**.

[0099] The liquid **5** is supplied to the surface member **40** by the plurality of liquid feeds **86** and flows down the surface member **40** by the force of gravity. The liquid **5** will tend to pool at the bottom of the ramp structure and drain from the surface member **40** via the plurality of drains **85**. The drains **85** are in fluid communication with the return lines **84**. The liquid **5** travels from the drains **85** to the return lines **84** and return to the liquid supply **82**.

[0100] In the present embodiment, the liquid **5** in use is water. However it should be appreciated that in other various exemplary embodiments, the liquid could be of other forms or compounds that have a high viscosity, such as, but not limited to glycol for example. Additionally, it is contemplated by this invention that additives, common in the art may be included with the water **5** as required to increase the viscosity of the water. Still further, non-conventional liquids may be use in the device **10** such as juice, soda, alcohol (wine, beer, or Champaign) if so desired by the rider **1** or user.

[0101] The liquid supply **82** in the present embodiment is a tank. However, it should be appreciated that in other various exemplary embodiments, the tank could be replaced or combined with any natural or man-made water source, such as, for example, a lake, river, pool or city water supply. Additionally, if a natural source of water is being used, it is contemplated by this invention, that the water could drain back into the natural supply instead of being pumped to the tank.

[0102] In the present embodiment, at least one half inch of water **5** is desired on the surface member **40**, as depicted in FIG. 3. However, it should be appreciated that in other various exemplary embodiments the amount of liquid **5** on the surface member to maintain the hydroplane environment will vary according to several factors, such as, the steepness of the structure, the weight of the rider, and the desired equipment to be used by the rider are among the few to be considered. The formulation of how to provide this flow rate is calculated using conventional hydraulic methods for determining pressures, flow rates and the height the liquid **5** must be pumped, as is common in the art. An exemplary example in determining the flow rate is as follows: 900 Gallons Per Hour (or 15 Gallons Per Minute) multiplied per one lineal foot of weir (or liquid flow) across the fluid dispenser (or coping). The minimum amount of liquid supply in gallons is calculated by multiplying the length.times.width.times.depth.times.7.5.times.3 will provide the amount of gallons of liquid needed to supply the hydroplane surface liquid at ½ inch level. It should be appreciated that one skilled in the art of hydro-physics can determine the minimum ½ inch level of water liquid needed relative to size of hydroplane embodiment module by using calculation values known by those skilled in the art.

[0103] The surface member **40** is supported by the support structure **15**. In other exemplary embodiments, it is optional to have the surface member **40** removably attached to the support structure **15**. In the present embodiment, as shown in FIGS. 3 and 4 the surface member **40** comprises a first layer or support layer **41**, a second layer or barrier **42**, and a third layer or skim surface **43**, which provides the hydroplane environment. It should be appreciated that the surface member may be constructed from various layers as contemplated by this embodiment or from a unitary type construction, such as injection molding wherein the layers are not necessarily distinct separate layers as will be discussed further below. Further, the surface member can be unitary or be made up of distinct pieces that are placed adjacent to one another to form the entire width and length of the surface member **40**.

[0104] The surface member 40 has a width 51. The width is defined by a plurality of portions or side walls 44. It should be appreciated that the width of the surface member 40 may be different for different applications. Some additional exemplary embodiments with other width dimensions will be discussed further below. The plurality of portions 44 in the present embodiment are side walls or gunwales that define the boundary of the skim surface or hydroplane region 40. It should be appreciated that the gunwales in other exemplary embodiments are adjustable in height to control liquid depth level. The height adjustment in those embodiments can be controlled manually, electronically, hydraulically or the like.

[0105] The surface member 40 further includes a length, a first end 58 and a second end 59, which extends from where the surface member 40 joins the top of the support structure 15 at the loading platform 19 to the second end 59 of the surface member 40. The second end 59 is removable to facilitate the addition of other components or modules, as will be discussed below.

[0106] The plurality of liquid feeds 86 disposed on the surface member 40 further includes a plurality of dispensing portions 45, a plurality of dispensing portions 46, and a horizontal or coping dispenser 55. While the present embodiment depicts all of the plurality of feeds employed on the device 10, it should be appreciated that in other various exemplary embodiments the device may have any combination of the plurality of feed attached or in use.

[0107] The present embodiment includes two dispensing portions 45A and 45B, which are disposed adjacent the third layer 43. More preferably, the dispensing portions 45A and 45B are disposed on top of the third layer 43. The dispensing portions 45A and 45B are further preferred to be disposed against the gunwales 44. It should be appreciated that the dispensing portions in other various exemplary embodiments can be disposed in different locations from one another relative to the third layer 43. The dispensing portions 45A and 45B extend along at least a portion of the length of the surface member 40. It is further preferred that the dispensing portions 45A and 45B be disposed along substantially the entire length of the surface member 40, as can be seen in FIG. 1A. It should be appreciated that dispensing portions can, in other exemplary embodiments, be disposed along at least one portion of the length of the surface member. The dispensing portions 45A and 45B are in fluid communication with the supply lines 83.

[0108] The dispensing portions 45A and 45B include a plurality of elongated openings 63, which can be seen in FIGS. 3, 4, 9A and 11 through which the supplied liquid 5 may egress from the dispensing portion to the surface member 40. The plurality of dispensing portions 45 preferably terminate at the end 59 of the surface member 40.

[0109] FIGS. 11 and 12 display a detail of the plurality of dispensing portions 45. The plurality of dispensing portions 45 includes an outer member 61, an inner member 62 and an axis 65. The inner member 62 is disposed within the outer member 61. This arrangement can be thought of as a pipe within a pipe arrangement. It is preferred that the inner member 62 be coaxially aligned with the outer member 61 along the axis 65. The inner member 62 is in fluid communication with the supply lines 83 via conventional plumbing techniques, mechanisms and hardware that are common in the art. The liquid 5 is supplied to the inner member 62 as shown by the arrow D in FIG. 15. A plurality of orifices 64 are disposed along the length of the inner member 62. The orifices 64 are

preferred to be circular in shape. The outer member 61 includes the plurality openings 63. The openings 63 are preferred to be rectangle, with rounded corners, or elongated oval in shape. The openings 63 are disposed along the outer member 61. It can be appreciated that in other embodiments the plurality of openings 63 may be circular in shape with an increased quantity disposed along the dispensing portions 45 as shown in FIGS. 14, 17, and 19 for example. The plurality of orifices 64 in the present embodiment are preferably about one quarter inch orifices. However, it should be appreciated that in other various embodiments, other orifice could be or other sizes or mechanical nozzles to provide the proper flow rate to the surface member 40. Further, it should be appreciated that in other various exemplary embodiments, the orifices on the respective inner and outer members are shapes other than circles and ovals. Additionally, in other embodiments, the orifices of the inner and outer members have the same shape. Additionally, in other embodiments, the inner member 62 and outer member 61 can be aligned along the axis in various positions according to user preference.

[0110] In the present embodiment the inner member 62 is a one inch polyvinyl chloride (PVC) pipe and the outer member 61 is a two inch PVC pipe. However, it should be appreciated that in other various embodiments, other materials and sizes common in the art may be used. It should be appreciated that the diameter difference between outer member 61 and inner member 62 can vary depending upon the selection of the user for a particular application from about ¼ inch up to about 1 inch for most applications and from about 1 inch to greater than 3 inches for larger applications. Further, it should be appreciated that the diameter difference between outer member 61 and inner member 62 in extremely large embodiments can be greater than 3 inches.

[0111] For the purpose of orientation in reference to FIG. 12, the terms left, right, up and down will be used. This orientation is not intended to be limiting in the application of the plurality of dispensing portions 45. The plurality of orifices 64 enable the liquid 5, flowing through the inner member 62 from the supply lines 83, to exit the inner member 62 towards the right in the direction of the arrow A. The plurality elongated openings 63 enables the liquid 5, flowing out of the inner member 62, to exit the outer member 61 towards the left (or towards the skim surface 43 in this exemplary embodiment) and downward in the direction of the arrow B. With this arrangement of the respective orifices, the liquid 5 spills over the bottom edge of each of the openings 63 and onto the skim surface 43. The orifices 64, are preferred to be positioned such that its axis is substantially even with the axis 65 as to the up and down relative position of the axis 65. The openings 63 are preferred to be positioned such that each respective opening 65 is positioned below or more down than the axis 65. In the present embodiment, the ratio of orifices 64 to orifices of the elongated openings 63 along the length of dispensing portion 45 is preferred to be 3 to 1. However, it should be appreciated that in other various embodiments, other ratios may be utilized to accomplish desired flow rates of the liquid 5 exiting the elongated openings.

[0112] The plurality of dispensers 45 of the surface member 40 include a female end 53, as shown in FIG. 13, disposed at the portion of the plurality of dispensers 45 near the end 59, which is operably configured to receive a sealable male fitting, which is common in the art. In FIG. 13, a portion of the end 59 has been removed to expose the female end 53 for coupling up to another device, as will be discussed below. It

should be appreciated that in other various embodiments the connection of plumbing lines together can use various connection fittings as those used common in the art.

[0113] The plurality of dispensing portions **46** are disposed throughout the area of the surface member **40**, as shown in FIG. 9A. The plurality of dispensing portions **46** are dispersed in a pattern about the skim surface **43**. The pattern of the plurality of dispensing portions **46** is uniform on the surface member **40** with more dispensers **46** in the steeper sections and less dispensers **46** in more horizontal sections. The plurality of dispensing portions **46** penetrate the first and second layers **41** and **42**, as shown in FIG. 4. The portions **46** are preferred to be a conduit having a surface end and a non-surface end. The surface end being designed to be flush with the skim surface **43** of the surface member **40**. The non-surface end of each of the plurality of dispensing portions **46** is connected to a nozzle **47**. A supply line **48** is connected to the nozzle **47**. The supply line **48** is in fluid communication with at least one of the supply lines **83**. The nozzle **47** is preferred to be an adjustable nozzle to provide a variable flow rate based on a variety of factors. Such factors include, for example, the type of liquid **5** being used as the skimming fluid, the location of the nozzle on the surface member, the desired depth of skimming fluid. The nozzles **47** will assist in controlling the amount of liquid **5** being dispensed on the surface member **40**. Further, it should be appreciated that the nozzles **47** can be manual or automatically controlled, such as by a computer or computer program, to adjust the flow rate of the liquid **5**. It should be appreciated that in various embodiments dispensers **46** can be increased or decreased in quantity at various locations of the embodiment to affect liquid depth and flow rate according to user or rider preference, steepness of embodiment surface, and types of maneuvers being performed.

[0114] Additionally, it should be appreciated that the control of the nozzles can be dependent upon sensors, not shown, positioned about the surface member. The sensors, in some exemplary embodiments would detect the depth and/or the speed of the water at various locations, and/or location and speed of user or rider on hydroplane environment skim surface and alter the flow from particular nozzles upstream from the particular sensor to achieve a desired depth and flow rate of the skimming liquid **5**. It should further be appreciated that the plurality of dispensing portions **45**, the plurality of dispensing portions **46**, and the horizontal or coping dispenser **55** and any pumps and nozzles associated therewith could be similarly be manually or automatically controlled. Moreover, the control of the plurality of dispensing portions **45**, the plurality of dispensing portions **46**, and the horizontal or coping dispenser **55** and any pumps and nozzles associated therewith, could be dependent upon sensors as discussed above for nozzles **47**.

[0115] The surface end of each of the plurality of dispensing portions **46** have a cross-sectional shape at the surface of the surface member **40**. The cross-sectional shapes are preferably not the same for all of the dispensing portions **46**. The dispensing portions preferably have two different cross-sectional shaped openings, some being rectangular in shape and some are circular in shape as can be seen in FIG. 9A. Preferably, the rectangular shaped openings of the plurality of dispensing portions **46** are generally disposed near the steeper sections of the surface member **40** and reduce in number as the surface member levels out. The plurality of dispensing portions **46** that are circular in shape generally increase in

number as the surface member **40** starts to transition to the horizontal. The combination of rectangular shaped and circular shaped plurality of dispensing portions **46** is adjusted depending on the steepness of the device **10**, the quickness with which the surface member levels towards the horizontal in order to maintain the hydroplane environment. It should be appreciated that some embodiments, such as halfpipe, quarterpipe, big air, ramp-to-ramp, and half-frustum conical, the liquid dispensers can be reduced in quantity in steeper and/or vertical sections of hydroplane environment skim surface according to user or rider preference for type of maneuvers being performed.

[0116] The coping dispenser **55**, is similar in design as the plurality of dispensing portions **45**. The coping dispenser **55** is disposed along the first end **58** of the surface member **40**. It is preferred that the coping dispenser **55** extend along substantially the entire width of the first end **58**, as shown in FIGS. 1 and 9A. The coping dispenser **55** is the same construction as the plurality of dispensing portions **45**.

[0117] FIG. 9B rear view of the surface member **40**, or the backside of the features in FIG. 9A. Supply lines **83** supplies liquid **5** to supply tubes **48**, which in turn supply liquid **5** to the nozzles **47**. As shown in FIG. 9B, the supply of liquid **5** is set up as a manifold. It should be appreciated that the supply lines **83** could be arranged in other configurations to supply the liquid **5** to the supply lines **48** as is common in the art. The manifold liquid supply in this exemplary embodiment is preset to a predetermined supply amount based upon the diameter of the lines used and the volume of water being supplied. It should be appreciated that in other exemplary embodiments, the manifold liquid supply is controlled manually, electronically or a combination of both. Further, the liquid dispensers may also be linked directly to the liquid supply and bypass the manifold or the manifold may be removed all together in other exemplary embodiments.

[0118] The third layer or skim surface **43** forms the exterior surface of the surface member **40** upon which the skimming liquid **5** will flow. In the present embodiment the skim surface **43** is made from a fiberglass material. It should be appreciated that in other various exemplary embodiments, the skim surface could be of other materials, such as, for example, polymer composites, rubber coated materials, etc. The skim surface **43** is the area that the user or rider **1** uses with special equipment (to be discussed further below) to hydroplane upon a skimming liquid **5** along the surface member **40**.

[0119] The third layer or skim surface **43**, includes smooth areas and areas that include a plurality of rises or bumps **57**, as shown in FIGS. 9A and 10. The rises **57** preferably have a cross-section that is circular in shape. It should be appreciated that shapes other than circles may be utilized in other various exemplary embodiments, such as triangles, diamonds, ovals, etc. The plurality of rises **57** aid the rider **1** in reestablishing the hydroplane environment after leaving the skim surface **43** while doing an athletic maneuver. Particularly, as a rider **1** lands on the ramp device **10** after performing a maneuver the extra force from landing on the ramp **10** will tend to displace the liquid **5** under the rider **1**. However, the rider **1** will land on the top of the rises and since the rises have a height above the skim surface **43**, the liquid **5** will still be flowing under the rider **1** aiding the rapid return of the hydroplaning environment for the rider **1**. It should be appreciated that in other exemplary embodiments the skim surface is partially or entirely smooth. It is an option of this invention to have the plurality of rises or bumps **57** disposed only on steeper or

transitional portions of the surface member 40, because in the flatter regions there will tend to be deeper levels of skimming liquid 5 and the rider is unlikely to displace all of the liquid 5 in the deeper areas. Flatter regions preferably will range in depth from ½ inches to 6 inches or more, depending on user preference, hydroplane sport discipline and maneuvers being performed by user, and use of hydroplane embodiment relative to artificial, natural, or combination thereof liquid supply or embodiment. It can be appreciated that when hydroplane embodiment is used in conjunction with natural liquid supply such as ocean, lake, or river, or with artificial liquid supply such as with pool or tank, the liquid depth level may increase greater than 6 inches while still providing for efficient hydroplane environment to users. Further, it should be appreciated depth of liquid could be reduced progressively from flatter or horizontal regions transitioning through the radius and angled or vertical regions depending upon user preference, hydroplane sport discipline and maneuvers being performed by user or rider. The progressive reduction in depth of the liquid going up a ramp type device is facilitated by the notion that gravity is pulling rider down the device and less liquid is needed to sustain a hydroplane environment. Accordingly, in the steeper regions of a hydroplaning device, made in accordance with the present invention, gravity combined with the angle of the ramp/device allows the rider to fall more rapidly than less steeper regions and thus less liquid depth is needed.

[0120] In the embodiment shown in FIG. 10, each of the plurality of rises 57 has a diameter 58 and a height above the skim surface 43. The diameter 58 may have a range of one eighth to one half inch. The height may have a range of one eighth to three eighths of an inch. In this embodiment the preferred diameter 58 is one quarter of an inch and the preferred height is one thirty-second of an inch. It should be appreciated that in other various exemplary embodiments, the height and diameter could be varied according to user preferences, type and size of hydroplane embodiment used, type of maneuvers being performed, and type of hydroplane device being used. It should be appreciated in one exemplary example, height and diameter used in the transition region of a quarterpipe with a platform 219 height of twenty feet would be greater height and diameter than what would be used in transition region of a quarterpipe with a platform 219 height of twelve feet. Further, it should be appreciated height and diameter in various hydroplane embodiments such as half-pipe, quarterpipe, and half-frustum conical would be of greater height and diameter in radius transition region of embodiment and decrease in height and diameter size as radius transitioned into vertical region of hydroplane surface.

[0121] The first layer 41 provides support to the third layer or skim surface 43. In the present embodiment, the first layer 41 is preferred to be made of plywood. However, it should be appreciated that in other various exemplary embodiments, the first layer could be of other materials such as metal, concrete, fiberglass, rubber, plastic, polymers, PVC, P-Tex, composites, etc., and injection molded, poured, or formed.

[0122] The second layer 42 is a protective barrier between the first and third layers. In the present embodiment, the first layer 41 is a flexible liquid impermeable polymer. However, it should be appreciated that in other various exemplary embodiments, the second layer could be of other materials such as metal, fiberglass, resin, plastic, rubber, polymers and composite materials, or combinations thereof.

[0123] The surface member 40, as shown in FIGS. 1 and 2 has a ramp or downhill slope configuration. The surface mem-

ber 40 extends from where the surface member 40 joins the top of the support structure 15 at the platform 19 to the end 59 of the surface member 40. In this configuration, the surface member 40 includes a catchment area 50, as shown in FIG. 1A. It should be appreciated that in other various exemplary embodiments, the surface member may have additional gun-wales disposed on the skim surface to create a lane, run, or course so that multiple riders 1 may use the device. It should further be appreciated that in other exemplary embodiments other preexisting structures can serve as the platform such as a deck, landing, roof, bridge, scaffolding or the like.

[0124] It should be appreciated that in other exemplary embodiments of this invention the surface member that supports the skim liquid and skim surface could be of one piece construction, instead of the three layers as described above. FIG. 5 presents a cross-section of an alternative embodiment of the surface member 40X. The surface member 40X is similar to the surface member 40. The surface member 40X includes a skim surface 43X, a plurality of side portions 44X, dispensing portions 45AX and 45BX, dispensing portions 46X. The surface member 40X also includes nozzles 47X and supply lines 48X. It should be appreciated that the one piece embodiments can be injection molded from various materials common in the art of injection molding. It should be appreciated that the injection molded embodiments can be used in singular or plural in "tile" or end-to-end configuration forms. Further, it should be appreciated that embodiment can be supported with conventional support systems and structures made from wood, metal, concrete, scaffolding, or laid over other sufficient support such as land, concrete, or already existing conventional action sport devices, such as used for skateboarding, snowboarding, and snow skiing. It should be appreciated that the injection modular units can be molded with or without plumbing within the unit.

[0125] Surface member 40X is different from surface member 40 in that surface member 40X is of a one piece or unitary construction. In this embodiment the surface member is preferably made by injected molding methods. FIG. 6 shows a lateral cross-section of the surface member 40X taken along line 6-6 in FIG. 5. As can be seen in FIGS. 5 and 6, the surface member 40X does not include the three separate layers as in the surface member 40. Rather these layers are combined in a one-piece construction. It should be appreciated that some of the plumbing features associated with the surface member 40X are external to the unitary one-piece construction, such as the dispensing portions 45AX and 45BX, nozzles 47X and supply lines 48X, while the dispensing portions 46X are embedded within and preferably also extend from the construction and connect with the nozzles 47X.

[0126] FIG. 7 presents a cross-section view of another alternative embodiment of a surface member 40Y. The surface member 40Y is similar to the surface member 40 and 40X. The surface member 40Y includes a skim surface 43Y, a plurality of side portions 44Y, dispensing portions 45AY and 45BY, and dispensing portions 46Y. The surface member 40Y also includes supply lines 48Y. It should be appreciated that any of the surface members made in accordance with the present invention can be injection molded from various materials common in the art of injection molding. Further, it should be appreciated the injection molded embodiments can be used in singular or plural, in "tile" or end-to-end configuration forms. It should be appreciated the injection molded embodiments can be used in singular or plural, in "tile" or end-to-end configuration forms. Further, it should be appre-

ciated embodiment can be supported with conventional support systems and structures made from wood, metal, concrete, scaffolding, or laid over other systems and structures made from wood, metal, concrete, scaffolding, or laid over other sufficient support such as land concrete, or already existing conventional action sport devices such as used for skateboarding, snowboarding, and snow skiing.

[0127] Surface member 40Y is different from surface member 40 in that the surface member 40Y is constructed of injection molding, wherein all the dispensers 45AY, 45BY, and 46Y, as well as the valves 47Y and portions of the supply lines 48Y are molded within the surface member 40Y. Additionally, the side portions 44y are preferably integral to the surface member 40Y. FIG. 8 shows a lateral cross-section of the surface member 40Y taken along line 8-8 in FIG. 7. As can be seen in FIGS. 7 and 8, the surface member 40Y includes all the components internal to the molded surface member 40Y.

[0128] Additionally it should also be appreciated that the surface members 40X and 40Y could be constructed of multiple modular sections that are connected together to form the respective surface members as discussed below for member 40", for example, in connection with FIG. 16. While these are not shown, the surface members 40, 40X and 40Y could be similar to puzzle pieces that fit together to assemble the surface member 40, 40X and 40Y on the support structure 15 as required. It should be appreciated that the injection molded constructions of the embodiments of FIGS. 5-8 enables for convenient application of using such multiple modular sections being pieced together. Further it should be appreciated that when modular sections are used, the injection molded embodiments will include plumbing fittings on the sides and top and bottom of each module unit for mating with adjacent modules. These plumbing fittings will be external to the injected molded construction in embodiments like that shown in FIGS. 5 and 6 and the plumbing fittings would be internal and extend from the injected molded construction in embodiments like that shown in FIGS. 7-8. It should further be appreciated that the surface of the surface member may more easily be modified with injection molded embodiments. For example, the surface of the surface members of any embodiment of devices made in accordance with the present invention may undulate or be substantially flat. Further the overall shape of the surface member may be of a variety of shapes.

[0129] The catchment area 50 has a length. The catchment area 50 is a transition area wherein the rider 1 is transitioning from the slope section of the surface member 40 to a more horizontal section. The liquid 5 flowing down the surface member 40 will tend to pool in the catchment area. The catchment area is a section where the rider 1 can, if desired, dissipates energy after riding down the slope of the skim surface 43. The length is preferably determined or calculated according to the hydroplane environment sport activity discipline for which the device is to be utilized, the maneuvers to be performed by rider, the rider preference, and ability of rider. The length dimension does not have to be limited to the noted factors and can be as long as desired by the user. Further in other exemplary embodiments the catchment area even extends so as to mate or flow into a natural body of liquid, such as a river or ocean. Further it should be appreciated that the catchment area is not limited to straight sections and in some other embodiments is actually shaped in non-linear shapes. The catchment area 50 includes the plurality of drains 85, which return the liquid 5 to the liquid supply 82. The catchment area 50 also has some of the plurality of dispensers

45 and 46. Further, the liquid 5, for this exemplary embodiment, is allowed to flow in to the catchment area 50 to a depth from one half inch to about six inches, depending on the preferences of the user. The level of the liquid 5 may increase beyond six inches if so desired by the user 1. While the present embodiment has the plurality of drains 85 are disposed near the end 59 of the surface member 40, it should be appreciated that in other various exemplary embodiments, the liquid 5 can be returned to the supply tank 82 though other methods common in the art, such as but not limited to chutes, troughs, channels, and gutters and in fluid communication with return flow. Further, it should be appreciated that drains can be placed at various locations of hydroplane surface and in fluid communication with return lines.

[0130] Further, it is contemplated by this invention that the flow rate of the liquid or fluid 5 to the surface member 40 be controlled either manually or automatically through the use of computer programs common in the art. Additionally, the flow rate of fluid could be controlled in real time by the inclusion of electronic triggers and sensors common in the art that are activated as the rider 1 passed specified locations along the surface member 40. The activated sensors would in turn increase or decrease the rate of fluid flow downstream of the rider 1 based on preset parameters according to the rider 1 preferences.

[0131] The flow rate of the liquid, which is water for the present embodiment, is controlled such that the water maintains a depth of at least one half inch long the skim surface 43 until the catchment area 50. The desired flow rate should take in to account variables such as the weight of the rider, the type and surface area of the riding equipment being used, the steepness of the surface member 40, the density of the liquid being used and the expertise of the rider. The heavier the rider, the more liquid flow that will be needed. The steeper the ramp the less flow that is needed to maintain the hydroplane environment. The denser the liquid the less flow that is needed, the more experienced the rider, the less flow that is needed and the great the surface area of the riding equipment the less flow that is need to maintain the hydroplane environment.

[0132] The device 10 may be used with a plurality of similar devices made in accordance with the present invention to provide a skimming surface. The other devices can be thought of as modular additions that can be used in a variety of combinations with one another and the device 10.

[0133] Referring to FIG. 1B, wherein a schematic representation or outline of the top surface is shown. An angle 90 is defined between the platform 19 and a horizontal reference. The preferred angle for angle 90 is about 3 to 7 degrees. The angle 90 enables riders to ease into the steep part of the ramp as opposed to abrupt drop. However, it should be appreciated that in other exemplary embodiments, 0 degrees may be employed for angle 90. An angle 94 is defined between the surface member 40 and a horizontal reference. The angle 94 is preferred to be about 15 to 85 degrees. The angle 94 is even more preferred to be about 23 to 70 degrees. The angle 94 allows gravity to act upon the rider so that the rider hydroplanes upon the liquid flowing on top of the surface member 40. It should be appreciated that the angle 94 can also be 0 degrees. The rider will travel down the device faster than the rate of the flowing liquid. This invention utilizes gravity as the force to enable the rider to traverse the device on hydroplaning riding equipment and uses liquid upon the surface member 40 to enable that traversing to be via hydroplaning.

[0134] The section between the steep incline of the device 10 and the catchment area is referred to as the transition section 94. The transition section has a radius 96. The transition radius 96 is preferred to be about 14 feet when a height 98 of the platform 19 is about 23 feet. The height 98 is measured from about the vertical level of the bottom of the platform to the vertical level of the catchment area. Further preferred height 98 to transition radius 96 are as follows (height-radius): about 3 to 7 feet in height-about 7 foot radius; about 7 to 12 feet in height-about 10 foot radius; about 12 to 20 feet in height-about 14 foot radius; about 21 to 60 feet in height-about 15 to 23 foot radius; and about 61 to >100 plus feet in height-about 30% to 33% of height. The radius can be designed to rider level of ability, strength, maneuvers/tricks to be performed and hydroplane embodiment type or style. Decreasing the radius will exert more forces upon the rider.

[0135] Referring to FIGS. 14 and 16, exemplary embodiments of a jump module 11 and a landing module 12 are shown. The jump module 11 and landing module 12 are optional. These modules may also be used for drop-ins, slopes or just ramps. The jump 11 includes a support structure 15' and a surface member 40'. The support structure 15' is similar in construction to support structure 15. The support structure 15' includes braces and posts as in support structure 15, which are not shown. The support member 15' has a height 21', which is less than the height 21 of the support structure 15. It should be appreciated that the height of the jump compared to the ramp is adjusted according to user or rider preference, maneuvers being performed by user or rider, location of embodiment, ability of user or rider. Further, it should be appreciated the height of the jump compared to the height of the ramp can be sufficient to allow for user or rider preference of achieving air, substantially elevated air, or "big air" in performing various action extreme hydroplane skim maneuvers and which those skilled in the art can determine. In various embodiments the ratio of jump height to landing module height is approximately jump height at sixty to eighty percent of ramp height. In some embodiments jump height and ramp can be even in height. Further, in various embodiments of smaller size, or when user or athlete is at a beginner level of ability, the landing module could be lower in height than jump height. The support structure 15' includes side panels 22', only one is shown in FIG. 14, an equivalent side panel is on the opposing side.

[0136] The surface member 40' of the jump 11 includes all the features of the surface member 40 so as to provide a skim surface 43' for which a liquid 5 will flow over it enabling a rider 1 to skim on the liquid 5. In the present embodiment the surface member 40' comprises a first layer or support layer, a second layer or barrier, and the third layer or skim surface 43', similar to surface member 40 as shown in FIGS. 3, 4 and 9A. The surface member 40' has a width 51'. The width is defined by a plurality of side walls 44'. The plurality of side walls 44' in the present embodiment are gunwales that define the boundary of the skim surface or hydroplane region 40'. The surface member 40' further includes a length, which extends from where the surface member 40' joins the top of the support structure 15' to an end 59' of the surface member 40'. It should be appreciated that gunwales or liquid barrier partitions can be placed in field surface area of embodiment to create a lane, run, or course while still providing for and enabling use of hydroplane embodiment.

[0137] Additionally, the surface member 40' further includes a plurality of dispensing portions 45' and a plurality

of dispensing portions 46'. These features are similar to those of the surface member 40 discussed above. It should be appreciated that dispensing portions 45 & 46 can be reduced or eliminated according to user or rider preference, type of hydroplane sport discipline or activity, and maneuvers being performed by user or rider.

[0138] The plurality of dispensers 45' of the surface member 40', as shown in FIG. 15, includes a male end 49', which is operably configured to engage the female end 53 of the surface member 40, shown in FIG. 13, plurality of dispensers 45 of the surface member 40. In the present embodiment, the male end 49' is a bayonet type fitting. However, it should be appreciated that in other various exemplary embodiments, other sealable fittings common in the art may be used.

[0139] The fitting 49' is inserted in to the end 53 to allow the fluid communication between the ramp 10 and the jump 11. The fitting 49' is removeably connected to the female end 53. The liquid circulation system 80 supplies liquid 5 to the jump 11 creating a hydroplane environment on the skim surface 43' of the jump 11. It is contemplated by this invention, that the jump 11 and landing ramp 12 could each have an independent liquid circulation member and not be connected to the liquid circulation system 80 of the device 10. It should be appreciated that jump 11 hydroplane module can also be used as ramp, landing ramp, or reduced quarterpipe for users or riders preference.

[0140] The landing module 12 is similar to the jump module 11 and the device 10. It should be appreciated that landing module 12 can also be used as ramp, jump, drop-in, according to user or rider preference, hydroplane course set-up, maneuvers being performed by user or rider, or any combination thereof. Referring to FIG. 16, an exemplary embodiment of the landing module 12 is shown. The landing module 12 includes a support structure 15" and a surface member 40". The support structure 15" is similar in construction to support structure 15. The support structure 15" includes braces and posts as in support structure 15, which are not shown. The support member has a height 21", which is preferably less than the height 21' of the support structure 15'. Height of module 12 when used as landing ramp hydroplane module can be lower, even, or higher in elevation than jump 11 module depending on user or rider preference, hydroplane sport discipline participating in, type of maneuvers being performed, ability of user or rider, and any combination thereof. The height of the landing ramp module is calculated by those skilled in the art factoring in aspects previously disclosed, and hydroplane flow discussed herein. The support structure 15" includes side panels 22", only one is shown in FIG. 16, an equivalent side panel is on the opposing side.

[0141] The surface member 40" of the landing module 12 includes all the features of the surface member 40. In the present embodiment, as shown in FIG. 11, the surface member 40" comprises, a third layer or skim surface 43" gunwales 44" a plurality of dispensers 45" and a plurality of dispenser 46". A first layer or support layer and a second layer or barrier are also included, but not shown in the figures. The surface member 40" has a width 51". The width 51" is defined by gunwales 44". The gunwales 44" define the boundary of the skim surface or hydroplane region 43". The surface member 40" further includes a length, which extends from where the surface member 40" joins the top of the support structure 15" to an end 59" of the surface member 40". It should be appre-

ciated gunwales **44**" located on upper portion of module **12** can be adjusted up or down to assist in control of liquid depth on hydroplane surface.

[0142] Additionally the surface member **40**" also includes a plurality of dispensing portions **45**", a plurality of dispensing portions **46**", and a catchment area **50**". These features are similar to those of the surface member **40** discussed above. It should be appreciated option of invention module **12** can use liquid dispenser FIG. **10** across upper horizontal portion of embodiment module **12**.

[0143] The landing module **12** also includes a plurality of drains **85**", liquid supply lines **83**" and liquid return lines **84**". The supply lines **83**" are in fluid communication with the supply lines **83** of the device **10**. The drains **85**" are disposed in the catchment area **50**" and are in fluid communication with the return lines **84**", which are themselves in fluid communication with the return lines **84** of the device **10**. The catchment area **50**" has a length sufficient to disperse the energy of the rider. It should be appreciated that catchment area **50** can also be used in conjunction with other hydroplane modules. Further, it can be appreciated that catchment area **50** can also be used with opening on end in use with natural liquid supplies such as lake, river, ocean, stream, or reservoir or artificial liquid supplies such as pools, tanks, ponds, etc., and connect to other embodiments.

[0144] The liquid on the surface of devices **11** and **12** will vary depending upon the intended use of the devices. More water will be need at the top or higher portions of the devices if they are to be used as landings and less water at the top portions if they are to be used as jumps. The upper flatter portions of these devices are preferred to have about 3 to 5 inches of liquid on the surface. The transitional "upper" radius into angled surface area liquid depth is preferred to be about 2 to 3 inches. The transitional "lower" radius into the horizontal (catchment) area liquid depth is preferred to be about 2 inches. The horizontal catchment area liquid depth is preferred to be about 3 to 5 inches. The liquid dispenser and pump flow rates are adjusted according to achieve desired liquid depths in the different sections. The transitional "upper" radius and degree of angle surface area are designed to arch, (height, distance, and landing angle) of user when landing on embodiment from a jump. The alternative side drain system as disclosed below with reference to FIG. **20** may be utilized with these devices as well and even at the upper sections.

[0145] Referring again to FIG. **16**, the device **12** further includes a plurality of module units or tiles **99**". The module units **99**" fit together to form the surface of the surface member **40**". The module units **99**" have a generally rectangular shape. It should be appreciated that the module units in other exemplary embodiments have other various shapes and size. The module units preferably have a rigid supporting frame to support the liquid fluid skim surface. The supporting frame members are preferably constructed out of metal, wood or plastic. The supporting frames also preferably have attachment points to allow for connection to other adjacent modular units using fasteners. The modular units can be arranged in a variety of ways and can be connected at ends, sides or both depending on the desired application and arrangement. The modular units preferably have attachment points for the plumbing system, seals, the liquid fluid barrier and the skim surface. The modular units preferably include plumbing fittings and valves, such as male and female connections, that allow the plumbing system of each module unit to mate with

the plumbing system of adjacent modules. The plumbing systems of some of the modules are connectable to the supply lines from the plumbing system of the entire device. The module units also preferably include attachment points on the bottom surfaces for attaching the modules to the supporting structures. These types of module units or tiles can be utilized with any of the various action hydroplaning devices made in accordance with the present invention.

[0146] Referring to FIG. **17**, a box module **13** for the device **10** is shown. The box module **13** includes a support structure **15**" and a surface member **40**". The support structure **15**" includes similar features as the support structure **15** described above and for example includes braces **16**" and posts **17**", a height **21**" and a side member **22**". It should be appreciated that the liquid dispensers **45**" can, in other exemplary embodiments be secured to side of box module **13** which still provides for liquid supplied to surface area **43**". Being mounted on the side will allow a rider to hydroplane across the device without rubbing against the dispensers when the box has a narrow width and the rider is riding with skis or a board that is aligned perpendicular to the length of the device. The surface member **40**" includes similar features as the support structure **40** described above and includes for example a skim surface **43**", a width **51**" a length **52**" and a plurality of dispensers **45**". The surface member **40**" may in other exemplary embodiment include surface dispensers like the plurality of dispensers **46** of the device **10**. It should be appreciated that box module **13** could feature singular or plurality of dispensers **46** if user or rider prefers. Further, it should be appreciated that in other exemplary embodiments the drains **85**" are optional and the liquid may simple flow over the side of the device or flow over the sides and be caught in a trough, not shown, and returned to the supply lines.

[0147] The box module **13** in the present embodiment has a generally rectangular shape and further includes a supply line **83**" return lines **84**" and drains **85**". The supply line **83**" is in fluid communication with the supply line **83** and the return line **84**" is in fluid communication with the return line **84** of the ramp **10**.

[0148] The box module **13** can be used in various configurations and combinations with other hydroplane embodiments according to hydroplane course set-up, user or rider preference, type of hydroplane sport discipline and which is being performed by user or rider such as cascade stair-step slopestyle, street, park, or any combination thereof. It should be appreciated that in one example, box module would be placed in catchment area **50** of device **10** described above. Further, it should be appreciated in another example, box module **13** could be placed or featured in horizontal cascade step of FIG. **21**. Further, it should be appreciated in another example box module **13** could be featured between jump module **11** FIG. **10** and landing module **12** FIG. **12** according to user or rider preference.

[0149] Further, skill devices that are common in snowboarding and skateboarding, such as for example, but not limited to a flat rails, boxes, rainbow rails and logsides, not shown, may be used in conjunction or integrated with the device **10** and the modules discussed above.

[0150] FIG. **18** displays perspective view of a hydroplane extreme action sport device **100**. The device **100** resembles in shape to what conventionally is known as a half-pipe. The device **100** is an alternative embodiment of action hydroplaning device, made in accordance with the present invention. The device **100** is similar to the device **10** described above.

The device 100 includes a support member 115, a surface member 140, a liquid circulation member 180, and a catchment area 150.

[0151] The support member 115 includes a plurality of braces 116, a plurality of posts 117, a platform 119, a safety rail 120 and a height 121. The surface member 140 includes a first layer (not shown) a second or barrier layer (not shown) and a third layer or skim surface 143. Additionally, the surface member 140 includes a plurality of dispensers 145 and 146, rises 157 and a width 151, similar to the device 10. The liquid circulation member 180 includes pumps 181, a liquid supply 182 and various plumbing supply lines 183, plumbing return lines 184 and a plurality of drains 185, as in the device 10 described above. The device 100 also includes a plurality of supply tubes 148 in fluid communication between the supply lines 183 and the plurality of dispenser 146 as in the device 10.

[0152] One difference in the device 100 from that of the device 10, for example, is the support member 115 includes an opposing ramp to make up one side of the "half-pipe." The opposing ramp has a height 123. The device 100 also includes an additional platform 124 and an additional safety rail 125 for the opposing ramp, as shown in FIGS. 18 and 19. Further, the support member 115 is not configured in a ramp or slope shape. Instead the support member 115 is a bowl shape, or manner which supports half-pipe embodiment commonly referred to as a half-pipe design, having two opposing sides each in the shape of a partial arch and having radii 126 and 127.

[0153] Referring to FIGS. 18 and 19, the height 121 and 123 of the half-pipe device 100 are the same. However, it should be appreciated that in other various exemplary embodiments, the height 123 could be less than the height 121, according to the preferences of the user 1. Additionally, the radii 126 and 127 in the present embodiment shown in FIG. 19 are the same. It should be appreciated that in other various exemplary embodiments, the radius 127 could be less than the radius 126 according to the preferences of the user.

[0154] The catchment area 150 in the device 100 provides a transition for the rider from one side of the half-pipe to the other. Additionally, the catchment area 150 includes the plurality of drains 185. The catchment area 150 also includes a length. In the present embodiment, the length of the catchment area 150 is shorter in length to allow for user to maintain highest level and speed of kinetic energy so user can hydroplane across catchment area through radius transition area to vertical hydroplane surface area of embodiment so user can perform various maneuvers. It should be appreciated that the catchment area can be adjusted in shorter or longer lengths according to user or rider preference, maneuvers being performed by user or rider, the combination of other hydroplane modules being used if any, and ability of user or rider, or any combination thereof. However, it should be appreciated that in other various exemplary embodiments, the length of the catchment area could be lengthened or shortened, according to the preferences of the user. The height of the sides of the halfpipe must be of minimum height to provide for sufficient performance of maneuvers and according to preference of user or rider, ability level, and height of drop-in. Further, it should be appreciated the height of the sides of the catchment area can be adjusted in height manually or automatically to control depth of liquid according to user preference.

[0155] The liquid 5 in use in the device 100 is water. The liquid circulation member 180 provides flow rates of water 5

to provide a hydroplane environment on the surface member 140. It is desired that at least one half inch of water be on the surface member 140. In the catchment area 150, the water will collect and empty into the plurality of drains 185. The water in the catchment area 150 may have a level from one half inch to six inches depending on the preferences of the user. It should be appreciated that the level of water may vary according to conditions previously described above. Further, it should be appreciated that when using various hydroplane embodiments, water in catchment area or at end of embodiment can be deeper in level for example when using device 100 in conjunction with natural river, lake, stream, or ocean, or in use with artificial liquid pool or tank for example. The liquid flow rate and depths are calculated for both sides of the halfpipe. Each side is not required to have the same flow rate and depths. It should be appreciated the side walls or gunwales of halfpipe in various halfpipe embodiments can be adjusted up or down to adjust liquid depth. Further, it should be appreciated that multiple plumbing system or the same plumbing system may be utilized for both sides of the half-pipe.

[0156] FIG. 20 displays perspective view of a hydroplane extreme action sport device 200. The device 200 is an alternative embodiment of an action hydroplaning device, made in accordance with the present invention. The device 200 is a quarter pipe type ramp. The device 200 is similar to and includes similar features as the devices 10 and 100 described above. The shape of device 200 is the primary difference with devices 10 and 100. The device 200 includes a support member 215, a surface member 240, a liquid circulation member 280, and a catchment area 250. The device 200 also includes a plurality of supply tubes (not shown) in fluid communication between the supply lines 283, the plurality of dispenser 246 and coping dispenser 255 as in the device 10.

[0157] The support member 215 includes a plurality of braces 216, a plurality of posts 217, a platform 219, a safety rail 220 and a height 221. The surface member 240 includes a first layer (not shown) a second or barrier layer (not shown) and a third layer or skim surface 243. Additionally, the surface member 240 includes a plurality of dispensers 245 and 246, rises 257 and a width 251, similar to the devices 10 and 100. The liquid circulation member 280 includes a pump 281, a liquid supply 282 and various plumbing supply lines 283, plumbing return lines 284 and a plurality of drains 285, as in the devices 10 and 100 described above. Like the device 100, the device 200 has a radius 226, as shown in FIG. 21. It should be appreciated when liquid supply is equal or higher in height to height of drains a pump 281 is used to return liquid to liquid supply source. It should be appreciated the side walls or gunwales in various quarterpipe embodiments can be adjusted up or down manually or automatically to adjust liquid depth according to user preference. Further, it should be appreciated device 200 can be used in conjunction with other embodiments, including device 10. Further, it should be appreciated device 10 could plumbing system could also supply device 200 with appropriate size pumps and plumbing system known to those skilled in the art. The quarterpipe device 200 is preferably intended to be used with device 10 so that user or rider goes DOWN the drop-in device 10 travels across catchment area and then goes UP the quarterpipe performing a maneuver or track and then travels back down into catchment area.

[0158] One difference in the device 200 from that of the device 100, is the device 200 only has one radii or arch.

[0159] The catchment area 250 in the device 200 provides a transition for the rider from horizontal 250 to radius or vertical area back to the horizontal 250. It should be appreciated in various uses of device 200 catchment area 250 provides a transition for the rider from platform 219 drop-in through radius to the horizontal 250. Additionally, the catchment area 250 includes the plurality of drains 285. The catchment area 250 also includes a length. The length of the catchment area 250 is similar to the length of the catchment area 150 in the device 100. It should be appreciated catchment area in some various uses of device 200 could be more similar to the catchment area 50 in device 10. In the present embodiment, the length of the catchment area 250 is 8 to 12 feet depending on the height of drop-in if embodiment is being used and ability of user or rider. It is preferred that the minimum length of the catchment area, from beginning of each transition radius, in all halfpipe, quarterpipe, and half-frustum conical embodiments, be at least $\frac{1}{4}$ the height of the drop-in, slope or ramp. However, it should be appreciated that in other various exemplary embodiments, the length of the catchment area could be lengthened or shortened, according to the preferences of the user or rider, their ability, and the maneuvers being performed.

[0160] It is also contemplated by this invention the catchment area 250 could include some of the features described above such as the jump 11 and landing area 12 or the box 13. Further, conventional rails, logslides, boxes, spines, jumps and the like commonly extreme action sports industry, could also be used or deployed within the catchment area 250. The catchment area 252 includes drain troughs 286. The drain troughs 286 are in fluid communication with the liquid return lines 284. The drain troughs 286 provide additional draining of the liquid from the catchment area 250 other than just the drains 285. The liquid will flow over the side of the device or flow over the sides and be caught in a trough, and returned to the supply lines. The side of the drain trough can be adjusted manually or automatically. This type of drain trough can be used with any of the various devices made in accordance with the present invention.

[0161] The liquid 5 in use in the device 200 is preferably water. The liquid circulation member 280 provides flow rates of water 5 to provide a hydroplane environment on the surface member 240. It is desired that at least one half inch of water 5 be on the surface member 240. In the catchment area 250, the water 5 will collect and empty into the plurality of drains 285. The water 5 in the catchment area 250 may have a level from one half inch to five inches depending on the preferences of the user. It should be appreciated that other types of liquid and ingredients mixed with water can be used in various uses of hydroplane embodiment as previously described. Further, it should be appreciated that the side walls or gunwales of the catchment area in other variations of embodiment 200 can be adjusted up or down to control depth of liquid.

[0162] FIGS. 22 and 23 display a hydroplane extreme action sport device 300. The device 300 is an alternative embodiment of an action hydroplane device, made in accordance with the present invention. The device 300 is similar to the devices 10 and 100 described above. The device 300 includes a support member 315, a surface member 340, and a liquid circulation member 380. Further, it should be appreciated device 300 can also feature a vertical side wall area from radius edge 355 increasing in vertical height to edge of platform 390 on either or both sides of device 300. The vertical side wall height can be of various sizes depending on prefer-

ence of user, ability of user, size of embodiment, and type of maneuvers being performed. The vertical side wall area when in use with device 300 embodiment is similar to vertical side walls of skateboard halfpipe and snowboard or snow skiing halfpipe or superpipe.

[0163] The support member 315 includes a plurality of braces 316, a plurality of posts 317, a ladder 318, a platform 319, a safety rail 320 and a height 321. It should be appreciated that platform 19, (landing, scaffolding, etc.) and drop-in, start, transition slope or ramp can be on left side, right side, or both, straight, angled, or both relative to half-frustum conical embodiment displayed in FIGS. 22 and 23.

[0164] As opposed to the devices 10, 100 and 200, device 300 includes a second platform 390 is disposed along the length of the device 300. The second platform provides additional locations for riders to drop-in to the half frustum conical device. The second platform 390 is preferred to be disposed on both sides of the device 300. The platform 390 opposite from the side that the platform 19 is disposed along the entire length of device 300 and the platform on same side (not shown) as platform 19 is disposed along the length of device up to platform 19 drop-in, ramp, slope. It should be appreciated that either or both platforms are not required to be disposed along entire length of sides or for both platforms to be disposed at same time. Further, the second platform includes at least one rounded gap or drop-in section 392. The gap 392 provides a gentler or more transitioned entry for the rider into the half frustum conical device. It should be appreciated that the second platform and its features can be incorporated on either or both sides of device 300 and in other action hydroplaning devices made in accordance with the present invention, such as ramps, slopes, quarter-pipes, half-pipes and the like. The surface member 340 includes a first layer (not shown) a second or barrier layer (not shown) and a third layer or skim surface 343. Additionally, the surface member 340 includes a plurality of dispensers 345 and 346, coping dispensers 355, rises 357 and a width 351, similar to the device 10. The liquid circulation member 380 includes a pump 381, a liquid supply 382 and various plumbing supply lines 383, plumbing return lines 384 and a plurality of drains 385, as in the device 10 described above. The device 300 also includes a plurality of supply tube 383 in fluid communication between the supply lines 83 and the plurality of dispenser 346 as in the device 10.

[0165] The device 300 is also different from the previous devices 10, 100 and 200 in that the device 300, for example, instead of a catchment area, the surface member 340 has a half-frustum conical portion 360, (half in that the cone shape cut in half along the length of the cone). The surface member 340 includes a first width 361 and a second width 362. The first width 361 is larger than the second width 362. The reduction in width from the first width 361 to the second width 362 is preferred to be a linear reduction in width along the length of the device 300. Additionally, the half-frustum conical portion 360 includes a first height 363 and a second height 364. The first height 363 is higher than the second height 364. The reduction in height from the first height 363 to the second height 364 is also preferred to be linear along the length of the device 300. It should be appreciated that in other exemplary embodiments with a substantial half-frustum conical shape, the catchment area between the lower start of the transitional radius section on both sides can be more horizontal or "flatter" than in the embodiment shown. It is

preferred that with a flatter catchment area, the flatter area decrease along the length of the device progressively from end 365 to end 366.

[0166] The surface member 340 is supported by the support member 315. The surface member 340 has a cone shape that has the point of the cone cut off with the cone being bifurcated and laid on its side, as shown in FIG. 22. The first height 363 and first width 361 represent a larger opening or first end 365 of the cone and the second height 364 and second width 362 represent a smaller opening second end 366 of the frustum conical portion 360. The first and second ends 365 and 366 each include a gunwale 344. The first end 365 is at a higher elevation from the ground than the second end 366. This provides a natural gradient for the liquid 5 to flow from the first end 365 to the second end 366. The plurality of drains 385 are disposed in the half-frustum conical portion 360 near the second 366. In the present embodiment, the difference in elevation of the first end 365 to the second end 366 is a minimum of 3" inches. However, it should be appreciated that in other various exemplary embodiments, the difference in elevation of the first end to the second end could be substantially different as when embodiment is used in natural or artificial mountain, and in park or resort use depending on user or rider ability and maneuvers being performed by user or rider. For example, in use by professional user or rider, elevation change could be 50 feet or greater over distance length of embodiment of 200 feet. Further, it should be appreciated these ratios can be adjusted for user or rider preference relative to ability and maneuvers being performed. It should be appreciated that other modules, including just a module designed to just be a catchment area could be disposed adjacent the second end 365 so that the riders have an area to dissipate any remaining energy that have coming out of the device 300.

[0167] The liquid in use in the device 300 is preferred to be water. The liquid circulation member 380 provides flow rates of water to provide a hydroplane environment on the surface member 340. It is desired that at least one half inch of water 5 be on the surface member 340. In the half-frustum conical portion 360, the water will collect and empty into the plurality of drains 185. It should be appreciated that water or liquid in various use of embodiment can flow into chute, trough, pool, tank, gutter, or flume at end edge 366 of half-frustum conical and in fluid communication with liquid supply.

[0168] The height 321 is higher than the first height 363. When in use, the rider 1 will drop-in, start or begin from the second platform 390 or from the platform area 319, (which is at the height 321), and enter into the half-frustum conical portion 360. The rider 1 would go from one side to the other performing tricks and or stunts as the rider 1 progressed from the first end 365 to the second end 366. The shape of the half-frustum conical portion 360 utilizes gravity to provide the rider 1 continuing momentum as the rider 1 moves along the length of the device 300. A catchment area, not shown can selectively be placed at the end 366 for the rider to finish and disembark the device 300. It should be appreciated that the second platform landing area may in other exemplary embodiments be disposed on both sides of the half-frustum conical device. The second platform 320 provides an area for spectators, for users or riders, and for use when performing maneuvers such as "hand-plants. The second platform 320 can be duplicated on opposite side of half-frustum conical. Further it should be appreciated the end of radius 345 sides transition to vertical sections in various applications of

half-frustum conical depending on user or rider preference, maneuvers being performed, and ability of user or rider. Further, it should be appreciated that liquid dispensers and plumbing system is featured in various regions of embodiment according to course layout & set-up, rider & user preference, ability, and maneuvers and tricks performed by user or rider. Further, it should be appreciated that in other exemplary embodiments the radius area transitions to vertical in the half-frustum conical embodiment according to user preference.

[0169] FIGS. 24 and 25 represent exemplary embodiments of hydroplane action devices 400 and 500 made in accordance with the present invention. The devices 400 and 500 include combinations of the devices 10, 100 and 200 described above. It should be appreciated that devices 400 and 500 can also include modules 11, 12, and 13 in addition to 10, 100, and 200, and other combinations of modules such as rails, spines, or combinations thereof skilled in the art, in according to various use preferences, hydroplane course run set-up, user or rider preference, ability, and maneuvers performed by user or rider. As shown in FIG. 24, the device 400 includes a configuration of a hydroplaning jump element and landing element. This configuration is also known as "Big Air," ramp-to-ramp, jump-to-ramp, module-to-module, device-to-device, or "gap" embodiments. As shown in FIG. 25, the device 500 includes a configuration of a combination of parts to mimic a downhill extreme snow ski/board park, rather with the hydroplaning environment as contemplated by the present invention. It should be appreciated that in other exemplary embodiments, the downhill feature can be deployed in a natural mountain or land-earth environment, an artificial mountain shape extending 360 degrees around, or any combination thereof. With such an arrangement, riders 1 would be lifted up or walk up to the top and skim down in any direction encountering in various obstacles, jumps, rails and the like along the way. It should be appreciated that hydroplane extreme skim embodiments can be used singularly, or plurality so as to configure multiple lanes or runs similar to a bowling alley, skateboard park, or snowboard & snow ski resort, artificially made, naturally supported, or any combination thereof. Each of embodiments shown in FIGS. 24 and 25 includes support members, surface member and liquid circulation members in order to provide the hydroplane environment created by this invention. It is an intention of this invention to combine the devices 10, 100, 200, 11, 12, 13, 400 and 300 described above and employ them in a extreme action sport park type setting, similar to a skateboard park or ski slopes or amusement parks. A user of the systems and devices of the present invention may combine and configure the above listed devices, or any other devices utilizing the hydroplaning environment contemplated herein, in any order or configuration desired to create the extreme action hydroplane environment desired. It should be appreciated that hydroplane embodiment systems, modules, injection molded units, constructed or manufactured units, and mobile units, or any combination thereof, can be employed in a extreme action sport park or resort type setting, similar to skateboard parks, ski slopes, or amusement parks. Further, it should be appreciated that hydroplane embodiment systems can be employed on various means of transportation such as trains, ocean liners, boats, aircraft, and floating structures, or any combination thereof. Further, it should be appreciated that hydroplane embodiment systems can be temporarily and permanently employed over existing modules and devices of other similar action sports such as

BMX and skateboard ramps, natural or artificial, bleachers in outdoor or indoor stadiums and arenas, and halfpipe, slope-style, or mountains of snowboard and snow ski resorts. Further it should be appreciated hydroplane embodiment can be employed over sufficient supportive modules and devices in already existing amusement parks temporarily or permanently as preferred.

[0170] FIGS. 26-29 display a hydroplaning board B10 for use on the devices 10, 100, 200 and 300 above, made in accordance with the present invention. The board B10 has a length B11, a thickness B12, a first end B13 and a second end B14. Further, the board B10 includes a first or top surface B22, a second or bottom surface B23 and a first mounting area B15 and a second mounting area B16 disposed on the top surface B22. It should be appreciated that hydroplaning board device can be constructed, manufactured, injection molded, or any combination thereof from multiple layers of materials. Further, it should be appreciated hydroplane board can be constructed by hand-laying materials in sandwich method construction of multiple layers. Each mounting area B15 and B16 include a plurality of mounting orifices or mounting pads B17. The thickness B12 of the board B10 is uniform along the length B11, with the exception that in the mounting areas B15 and B16, the thickness B12 increases. In the present embodiment, the thickness B12 is preferred to be about $\frac{3}{8}$ to $\frac{5}{8}$ inches, and in the mounting areas the thickness B12 is preferred to be about $\frac{1}{8}$ to $\frac{1}{4}$ inches. However, it should be appreciated that the thickness of the B12 can vary according to type of materials used, user or rider preference, maneuvers board is being used for, and ability of rider or user board is made for. Further, it should be appreciated the mounting areas can be flush with top surface of board, or thicker than $\frac{1}{4}$ inch according to user or rider preference, maneuvers board is being used for, ability of user or rider, and type and amount of materials being used in construction or manufacturing of board. Further, it should be appreciated hydroplane board is made from materials of wood, fiberglass, resin, glue, and composite materials. Further, it should be appreciated hydroplane board can be made from materials such as metal, carbon fiber, alloy, wood, fiberglass, plastics, P-tex, rubber, textiles, or any combination thereof.

[0171] At first glance the board B10 appears like a conventional snow board. Like conventional snow boards, the board B10 has the first and second ends B13 and B14 bowed up or have a radius in the direction from the bottom surface B23 towards the top surface B22.

[0172] The board B10 includes features that are not in conventional snow boards or skate boards. One such feature is a plurality of grooves B18 near at least one of the first and second ends B13 and B14 on the top surface B22, as shown in FIG. 22. It is preferred that the grooves be near both ends. The plurality of grooves B18 are disposed generally perpendicularly to the length B11 of the board. It is preferred that the grooves B18 be formed as part of the top surface B22. However it should be appreciated that the grooves may be cut into the top surface B22. The grooves B18 increase the flexibility of the board B10 at the first and second ends B13 and B14. This increased flexibility at the ends enables for better hydroplaning performance on the hydroplane skim surfaces contemplated by the present invention and described above. The plurality of grooves B18 each preferably has a preferred depth of $\frac{1}{5}$ of a tenth of the thickness of the board to $\frac{3}{10}$ ths the thickness of the board. It should be appreciated that the length, depth, shape, and size of grooves can be changed and

varied according to rider or user preference, ability of rider or user, types of maneuvers being performed, type of hydroplane sport discipline participating in, and type of hydroplane module used on, or any combination thereof.

[0173] Additionally, the board B10 includes a plurality of grooves B20 disposed on the bottom surface B23, as shown in FIGS. 28 and 29. The grooves B20 are disposed generally parallel to the length B11 as shown in FIGS. 24 and 25. It is preferred that the grooves B20 be formed as part of the bottom surface B23. However it should be appreciated that the grooves may be cut into the bottom surface. The grooves B20 in this embodiment preferably have a concaved shape. The board B10 is preferably constructed out of wood, fiberglass, and composite material. However, it should be appreciated that in other various exemplary embodiments, the board could be constructed out of other material common in the art, such as fiberglass resins, wood, plastics, foam, rubber, metal, alloys, composites, carbon graphite, carbon fiber, Kevlar, P-Tex, etc. The plurality of grooves B20 have a preferred depth of preference according to rider ability, preference, maneuvers performed, specific hydroplane sport discipline, and type of hydroplane module using. Initial depth is $\frac{1}{15}$ th to $\frac{1}{5}$ th thickness of board.

[0174] Further, the board B10 includes a channel B21 disposed on the bottom surface B23, as shown in FIG. 28. The channel B21 is preferably disposed along the center of the board B10. The channel B21 has a depth B25. In the present embodiment the depth is preferably $\frac{1}{15}$ th to $\frac{1}{10}$ th to board thickness ratio. The channel B21 in this embodiment is preferred to have a general concaved shape. It should be appreciated that the channel, tunnels or grooves in other embodiments may be made up of several concentric channels increasing in width and length. Further, the channel, tunnels or grooves may also be of a variety of different shapes, such as concave, parabolic, or hyper-parabolic, and the edges may be convex, concave, radius, beveled, square, or any combination thereof.

[0175] The channel B21 and the plurality of grooves B20 increase the hydroplaning capability of the board B10. The channels and grooves affect and effect control, trackability, skimming/hydroplaning, and overall performance of board. The more channels and grooves and the deeper they are within the preferred range of depth increases the board stability. It should be appreciated that in other exemplary embodiments the bottom surface of the board is free of channels and grooves.

[0176] The first and second mounting area B15 and B16 are disposed on the top surface B22. It should be appreciated that mounting area can be injection molded into board, fastened or attached to board using adhesives or fasteners or combination thereof. The first mounting area B15 is disposed from the first end B13 at about one third the length B1. The second mounting area B16 is disposed from the second end B14 at about one third the length B11. It should be appreciated the second mounting position can be mounted at end B14 according to user preference. The distance between the mounting areas will also vary according to the rider performance ability, the type of maneuvers being performed, the size of the rider, the type of hydroplane embodiment board being used on, and the particular hydroplane sport discipline. The mounting areas B15 and B16 provide a location to place a foot or attach bindings to the board B10 as will be discussed below. While the board B10 is shown to include mounting area B15 and B16, in other exemplary embodiments the mounting area

could be optional, thus making the board what is called a free foot board. It should also be appreciated that in other exemplary embodiments one of the binding mounting areas is disposed adjacent or at the end of the board so the user's rear foot or boot can be placed closer to the rear of the board for additional control of the board.

[0177] The board B10 also has a width B26. The width B26 is not uniform along the length B1. The width B26 widens near the ends B13 and B14 creating a parabolic ends for the board B10. The length B11 and the width B26 have a ratio which varies according to rider or user performance, type of maneuvers being performed, type of hydroplane embodiment board being used on, and the particular hydroplane sport discipline.

[0178] The board B10 is different from conventional boards in that the plurality of grooves B18 increases the flexibility of the board B10, whereas conventional boards desire stiffness. An additional difference is the bottom shape radius and overall flexibility of board B10 specifically compliments use with hydroplane embodiment devices in this invention. An additional difference is also the inclusion of the plurality of grooves B20 and the channel B21 on the bottom surface B23. These features keep the liquid 5 between the board B10 and the skimming surface to allow the rider 1 to hydroplane easier than conventional skimming devices and boards. Conventional boards have a smooth bottom surface for less friction on snow. Another key difference between the board B10 and conventional boards is that the board B10 has non-sharp edges B24 as shown in FIG. 29. The edges B24 are preferred to have a generally concaved shape along the length of the board. A concaved shape proved for increased edge to edge control and turning. It should be appreciated the edges can have other shapes, such as rounded, beveled, radius, square, tapered, hyper-parabolic, or flat with a recessed surface or any combination thereof. Having a hyper-parabolic or a flat with a recessed surface shaped edge will provide for a more straight-line tracking and stability, but generally a board with such an edge will not turn or "roll" from edge-to-edge as well as a board with concaved shaped edges for example. The edging varies according to rider or user performance ability, type of maneuvers being performed, type of hydroplane embodiment board being used on, and the particular hydroplane sport discipline. In stark contrast, conventional boards use the sharp edges to cut into the snow. The board B10 does not include the sharp edges as sharp edges may harm the skimming surface 43 or riders 1.

[0179] FIGS. 30 and 31 show a board B110. The board B110 is similar to the board B10 and includes the features of the board B10. The board B110 includes a length B111, width B126, a thickness B112, a first end B113 and a second end B114. The board B110 further includes a first or top surface B122 and a second or bottom surface B123.

[0180] The board B110 is different from the board B10 in that the board B110 includes a plurality of grooves B120 disposed on the bottom surface B123 as does the board B10; however, while some of the plurality of grooves B120 some are generally parallel to the length B110 as in the board B10, the plurality of grooves B120 closest to the edge have a parabolic cut in relation to the length B111. Additionally, the board B110 is different from the board B10 in that the bottom surface B123 does not include a channel. It should be appreciated that grooves, channels, edges, bottom surface area, or any combination of, and can be of various size, shape, and length, in parabolic, hyper-parabolic, concave, convex, or any

combination form thereof, according to rider or user performance, type of maneuvers being performed, type of hydroplane embodiment board being used on, and the particular hydroplane sport discipline being engaged in by the rider.

[0181] FIGS. 32 through 34 show a board B210. The board B210 is similar to the board B10 and includes the features of the board B10. The board B210 includes a length B211, width B226, a thickness B212, a first end B213 and a second end B214. The board B210 further includes a first or top surface B222 and a second or bottom surface B223. It should be appreciated that board can use multiple layers of materials in various combinations such as wood, fiberglass, plastic, composites, metal, carbon fiber, carbon graphite, Kevlar, graphite, and rubber.

[0182] The board B210 is different from the board B10 in that the bottom surface B223 does not include a channel. It should be appreciated that board can include a channel according to rider or user preference. An additional difference in board B210 compared to board B10 is that the board B210 includes edges B224 with channels B229 along the extremities or edge of the width B226. This additional feature increases the amount of liquid 5 getting under the board B210 to increase the hydroplaning effect, control and tracking for the rider 1. This feature is contrary to conventional boards, which desire a sharp edge to allow the rider to cut into the snow.

[0183] While the embodiments discussed above include specific features of the board B10, B110 and B210, it is contemplated by this invention that the features may be combined or adjusted as desired by the rider 1. For example, the board B10 may have parabolic ends like board B110, or the board B210 may have a channel on the bottom like the board B10.

[0184] FIGS. 35 through 38 show another exemplary embodiment of another board B310 for using on the device 10. The board B310 is similar to a conventional wake board, ocean skim board, or flatland skim board used in water sports on a lake or river. The board B310 specifically has features which compliment the use of with hydroplane embodiment devices in this invention such as halfpipe, quarterpipe, big air, ramp-to-ramp, and half-frustum conical. This is contrary and is different from conventional boards previously mentioned and used in other water sports which the intended use and design of those conventional boards is not to be used with hydroplane embodiment devices in this invention. The board B310 is similar to the board B10 and includes the features of the board B10. The board B310 includes a length B311, width B326, a thickness B312, a first end B313 and a second end B314. The board B310 further includes a first or top surface B322 and a second or bottom surface B323. It should be appreciated that board can use multiple layers of materials in various combinations such as wood, fiberglass, plastic, composites, metal, carbon fiber, carbon graphite, Kevlar, graphite, and rubber.

[0185] The board B310 also includes a plurality of grooves B318 disposed on the top surface B322 and a plurality of grooves B320 disposed on the bottom surface B323. The plurality of grooves B318 are generally perpendicular to the length B311, while the plurality of groove B320 are both generally parallel and parabolic, concave, or hyper-parabolic in relation to the length B311. The plurality of grooves B318 are contrary to conventional wake boards. The plurality of grooves B318 increase the flexibility of the board 310, while conventional wake board are designed for stiffness.

[0186] The board B310 is different from the board B10 in that the shape of the board B310 is elliptical. The ratio of the length to width varies according to rider or user performance ability, type of maneuvers being performed, type of hydroplane embodiment board being used on, and the particular hydroplane sport discipline. Another difference in the board or elliptical skim board B310 is that the board B310 does not include mounting area. Instead the board B310 has a first free foot area B330 and a second free foot area B331. The first free foot area B330 is disposed near the first end B313 and the second free foot area is disposed near the second end B314. In the present embodiment the free foot areas B330 and B331 are traction material common in the art glued to the top surface B322. It should be appreciated that in other various exemplary embodiments, the free foot area could be areas of the top surface that have been roughed up by etching or laser cutting into the top surface, as is common in the art. It should be appreciated traction and gripping surface can be attached, fastened, or connected to board using adhesive, injection molding, fasteners, or any combination thereof.

[0187] FIGS. 39 through 42 show another exemplary embodiment of another board B410 for using on the device 10. The board B410 is similar to the board B310 and includes the features of the board B310. The board B410 includes a length B411, width B426, a thickness B412, a first end B413 and a second end B414. The board B410 further includes a first or top surface B422 and a second or bottom surface B423. The board B410 specifically has features which compliment the use of with hydroplane embodiment devices in this invention such as drop-in, halfpipe, quarterpipe, big air, ramp-to-ramp, and half-frustum conical. This is contrary and is different from conventional boards previously mentioned and used in other water sports which the intended use and design of those conventional boards is not to be used with hydroplane embodiment devices in this invention. It should be appreciated that board can use multiple layers of materials in various combinations such as wood, fiberglass, plastic, composites, metal, carbon fiber, carbon graphite, Kevlar, graphite, and rubber.

[0188] The board B410 also includes a plurality of grooves B420 and a channel B421 disposed on the bottom surface B423. The channel B421, like in the board B310 is generally parallel to the length B411. The channel B421 is similar to the channel B21 in the board B10 and provides the same effect of increasing the hydroplaning, control and tracking on the skim surface 43 of the device 10.

[0189] The board B410 is similar to the board B310 in that the shape of the board B410 is elliptical. The ratio of the length to width is similar to the boards discussed above. The board or elliptical skim board B410 is different from the board B310 in that the board B410 includes mounting areas B415 and B416 disposed on the top surface B422. The first mounting area B415 is disposed from the first end B413 at about one third the length B411. The second mounting area B416 is preferably disposed from the second end B414 at about one third the length B411. The mounting areas B415 and B416 provide a location to attach bindings to the board B410 as will be discussed below. The mounting area can be closer to end or at end according to user preference.

[0190] The board B410 is different from the board B310 in that the bottom surface includes a channel B429 along the extremities or edges of the width B426. This additional feature increases the amount of liquid 5 flowing under the board B410 to increase the hydroplaning, control and tracking

effect for the rider. Additionally, the plurality of grooves B420 are all generally parallel to the length B411.

[0191] FIG. 43 presents an exemplary embodiment of a binding device BD10, made in accordance with the present invention. The binding device BD10 is for use on the boards B10, B110, B210 and B410 to hold the boards B10, B110, B210 and B410 to the rider 1 when the rider is using the devices 10, 100, 200, and 300 for extreme action sports in a hydroplane environment, as discussed above.

[0192] The binding device BD10 includes a sole portion BD12, two side portions BD18, a heel portion BD14, and a calf portion BD16. The side portions BD18 are attached to the sole portion BD12. The heel portion BD14 is attached to the side portions BD18. The calf portion BD16 is flexibly attached to the sole and heel portions BD12 and BD14. The sole portion BD12 has a toe end BD30.

[0193] The binding device BD10 also includes a first adjustable securing member or strap BD22, which is rotatably attached to the side portions BD18 by pivot connection BD23 and is disposed near the toe end BD30 of the sole portion BD12. A second adjustable securing member or strap BD24 is rotatably attached to the calf portion BD16 by pivot connection BD25 near the heel portion BD14. The straps BD22 and BD24 each include a padding (not shown) to protect the rider from friction of binding device BD10. The padding is typically foam, but the padding could be of other materials common in the art.

[0194] The binding device BD10 includes a plurality of mounting fasteners BD20. The plurality of mounting fasteners BD20 allow the binding device BD10 to be rotatably mounted to the boards B10, B110, B210 and B410. The binding device is preferably able to be rotated and secured in various positions or locations by means of slots and grooves in mounting plate of binding and with various fastening holes on boards. The binding device BD1 in the present embodiment is constructed out of graphite; it should be appreciated however, that in other various exemplary embodiments, other materials common in the art may be used. To reduce weight of the binding device BD10, the side, heel and calf portions includes a plurality of orifices BD26 of various sizes. The bindings made in accordance with this invention are made from lighter materials than conventional bindings, contains drain holes to allow for less residence and greater flow-through of liquid, and are lighter duty due to less velocity energy on impact in hydroplane sport as compared to snowboard binding with snow. The bindings made in accordance with this invention are preferably made plastic, metal, carbon fiber, alloys, composites, carbon fiber, and carbon graphite, or combinations thereof. Further, it should be appreciated a boot made primarily of foam, neoprene, plastic, metal, or composites, and which stays mounted on board can also be used with this invention, which is similar to a wakeboard boot, but lighter in overall weight.

[0195] FIGS. 44 through 47 show a ski device SK10, made in accordance with the present invention for use on the devices 10, 100, 200 and 300 above. The ski device SK10 has a length SK11, a thickness SK12, a first end SK13 and a second end SK14. Further, the ski device SK10B includes a first or top surface SK22, a second middle core, and a bottom surface SK23 and a first mounting area SK15 and a second mounting area SK16 disposed on the top surface SK22. Each mounting area SK15 and SK16 include a plurality of mounting orifices SK17. The thickness SK12 of the ski device SK10 is uniform along the length SK11, with the exception that in

the mounting areas SK15 and SK16, the thickness SK12 increases. In the present embodiment, the thickness SK12 is preferably about $\frac{1}{2}$ to $\frac{5}{8}$ inches, and in the mounting areas the thickness SK12 is preferably about $\frac{1}{8}$ to $\frac{1}{4}$ inches. It should be appreciated the values and ratios will change according to rider or user preference, ability, and types of maneuvers being performed, and type of hydroplane module user or rider is on. Further, it should be appreciated that ratios will change depending on which combination of materials are used in multi-layer of material construction and manufacturing of ski such as wood, foam, fiberglass, metal, composites, plastics, carbon fiber, and carbon graphite.

[0196] At first glance the ski device SK10 appears like a conventional snow ski. Like conventional snow skis, the first end SK13 and the second end SK14 of the ski device SK10 is bowed upwards. The first end SK13 includes a radius in the direction from the bottom surface SK23 towards the top surface SK22. The ski device is preferably made from a multi-layer construction.

[0197] The ski device SK10 includes features that are not in conventional snow or water skis. A difference is that the ski device SK10 includes a plurality of grooves SK18 disposed on the top surface SK22 toward the first and second ends SK13 and SK14. These plurality of grooves SK18 are disposed generally perpendicularly to the length SK11 and increase the flexibility of the ski device SK10 at the first and second ends SK13 and SK14. This increased degree of flexibility at both ends is not desired for conventional snow and not at all for water skis. The ski device differs greatly from a conventional water ski in that the flexibility is similar to a snow ski, is not rigid like a water ski, and is much lighter in weight than a water ski. The swing weight of the ski in this invention is much lighter than water ski also. The ski device in this invention differs greatly from a conventional snow ski in that the camber of the ski can be neutral, same, or opposite camber as compared to camber of a snow ski. The bottom of ski device is intended for specific use in hydroplane environment which differs greatly from conventional snow ski which is intended specifically for gliding or sliding over snow or ice.

[0198] The plurality of grooves SK18 have a preferred depth of about $\frac{1}{16}^{th}$ to $\frac{1}{8}^{th}$ inch depending on rider or user preference, type of maneuvers being performed, and types of hydroplane embodiment ski device is being used on, as shown in FIG. 40. It should be appreciated that grooves, channels, edges, bottom surface area, or any combination of, and can be of various size, shape, and length, in parabolic, hyper-parabolic, concave, convex, or any combination form thereof, according to rider or user performance ability, type of maneuvers being performed, type of hydroplane embodiment ski device is being used on, and the particular hydroplane sport discipline participating in. Additionally, the ski device SK10 includes a plurality of grooves SK20 disposed on the bottom surface SK23. The grooves SK20 are preferably formed within the top surface SK22. However, it should be appreciated that the grooves could be injection molded into top surface, or cut, or routed out of the top surface. The grooves SK20 are disposed generally parallel to the length SK11 and preferably have a depth of about $\frac{1}{40}^{th}$ to $\frac{1}{5}^{th}$ the thickness of ski, as shown in FIGS. 41 and 43. It should be appreciated that grooves, channels, edges, bottom surface area, or any combination of, and can be of various size, shape, and length, in parabolic, hyper-parabolic, concave, convex, beveled or any combination form thereof, according to rider or user performance, type of maneuvers being performed, type of hydro-

plane embodiment ski device is being used on, and the particular hydroplane sport discipline. Further, the ski device SK10 includes a channel SK21 disposed on the bottom surface SK23. The channel SK21 is positioned along the center of the ski device SK10 and has a depth SK25. The channel SK21 and the plurality of grooves SK20 increase the hydroplaning capability of the ski device SK10 on a hydroplaning surface, such as the skim surface 43 of the device 10 described above. The depth of the channel is preferred to be about $\frac{1}{10}^{th}$ to $\frac{1}{6}^{th}$ the thickness of ski device. The ski device SK10 is preferably constructed from wood or foam core materials, with a fiberglass or injection molded top, and a P-Tex or injection molded composite bottom material. Further, it should be appreciated that various other materials can be used in construction and manufacturing of ski device such as carbon fiber, carbon graphite, metal, plastic, and injection molded composites. Further, it should be appreciated ski device can be hand-made in layer form of multi-layer construction using various materials as previously described. However, it should be appreciated that in other various exemplary embodiments, the board could be constructed out of other material common in the art, such as fiberglass resins, wood, plastics, composites, metals, etc.

[0199] The first and second mounting area SK15 and SK16 are disposed on the top surface SK22 and about the center of the length SK11. It should be appreciated that distance of mounting area can vary according to size of user or rider, size of ski device, type of maneuvers ski is being used for, type of hydroplane sport discipline performing such as for example "big air", street, cascade stair-step slopestyle, halfpipe, or quarterpipe. The mounting areas SK15 and SK16 provide a location to attach bindings to the ski device SK10 as will be discussed below.

[0200] The ski device SK10 also has a width SK26. The width SK26 is uniform along the length SK11. The length SK11 and the width SK26 have a ratio varies according to size of user or rider, size of ski device, type of maneuvers ski is being used for, type of hydroplane sport discipline performing such as for example "big air", street, cascade stair-step slopestyle, halfpipe, or quarterpipe.

[0201] The ski device SK10 is different from conventional skis in that the plurality of grooves SK18 increases the flexibility of the ski device SK10 at the ends, whereas conventional snow skis are generally designed with increased stiffness towards the ends and whereas conventional water skis are designed with stiffness throughout the length. The ski devices of the present invention, differ greatly from a conventional water ski in that the flexibility of the skis is much great and not rigid like a water ski, and the skis of the present invention are much lighter in weight than a conventional water ski. The swing weight of the ski in this invention is much lighter than water ski also. The ski device in this invention differs greatly from a conventional snow ski in that the camber of the ski can be neutral, same, or opposite camber as compared to camber of a snow ski. The bottom of ski device is intended for specific use in hydroplane environment which differs greatly from conventional snow ski which is intended specifically for gliding or sliding over snow or ice. An additional difference is also the inclusion of the plurality of grooves SK20 and the channel SK21 on the bottom surface SK23. These features keep the liquid 5 flowing between the ski device SK10 and the skim surface 43 of device 10 to allow the rider 1 to hydroplane. These features also allow for greater rider 1 control of the ski device SK10. Conventional skis have

a smooth bottom surface for less friction and feature camber. The ski devices in this invention can feature camber, no camber, or reverse camber, depending on user and rider preference, type of maneuvers ski is being used for, type of hydroplane sport discipline performing such as for example “big air”, street, cascade stair-step slopestyle, halfpipe, or quarterpipe. Further, it should be appreciated the edges of snow skis are sharp with metal edges to cut through snow and ice, whereas, the edges of ski device in this invention are not sharp. The ski device SK10 includes edges SK24. The edges SK24 are generally flat. It should be appreciated the edges can have other shapes, such as concaved, rounded, beveled, radius, square, tapered, hyper-parabolic, or flat with a recessed surface or any combination thereof. A concaved shape proved for increased edge to edge control and turning. Having a hyper-parabolic or a flat with a recessed surface shaped edge will provide for a more straight-line tracking and stability, but generally a board with such an edge will not turn or “roll” from edge-to-edge as well as a board with concaved shaped edges for example.

[0202] FIGS. 48 through 51 show an exemplary embodiment of a ski SK110. The ski SK110 is similar to the ski device SK10 and includes the features of the ski device SK10. The ski SK110 includes a length SK111, width SK126, a thickness SK112, a first end SK113 and a second end SK114. The ski SK110 further includes a first or top surface SK122 and a second or bottom surface SK123. It should be appreciated ski device invention can be constructed out of multiple layers of materials common in the art.

[0203] The ski SK110 is different from the ski device SK10 in that the width SK126 is not uniform along the length SK111. The width SK126 is larger near the first and second ends SK113 and SK114. The ski SK110 is what is called a parabolic ski shape and is common in the art of skis. Additionally, the ski SK110 is different from the ski device SK10 in that the bottom surface SK123 does not include a central channel.

[0204] FIGS. 52 through 55 show a ski SK210. The ski device SK210 is similar to the ski device SK10 and includes the features of the ski device SK10. The ski SK210 includes a length SK211, width SK226 in a parabolic shape, a thickness SK212, a first end SK213 and a second end SK214, as well as edges SK224. The ski SK210 further includes a first or top surface SK222 and a second or bottom surface SK223.

[0205] The ski device SK210 is similar to the ski device SK10 in that the bottom surface SK223 does include a channel SK221 with a depth of SK225. A difference in ski device SK210 compared to ski device SK10 is that the board SK210 includes a plurality of grooves SK220 disposed within the channel SK221. This additional feature increases the amount of liquid 5 getting under the ski SK210 to increase the hydroplaning effect for the rider. It should be appreciated that all ski devices in this invention can incorporate various features and aspects of ski devices in this invention in various combinations. Another difference is that the edges SK224 of the ski device SK210 in this embodiment are generally concaved in shape.

[0206] The ski devices made in accordance with the present invention have similar middle and top features, and weight like a conventional snow ski, bottom features similar to conventional water ski, and camber, bottom surface, edge, flexibility, performance, swing weight, hydroplaning, and control features unique to this ski device invention. This hydroplane module ski device invention could not be used effectively in

snow skiing or water skiing sport activity. The preferred primary, specific, intended purpose and use for the ski devices made in accordance with this invention is for use with extreme hydroplane environment provided for by action hydroplane devices and embodiments and activities as described in this invention.

[0207] FIGS. 56 and 57 present an exemplary embodiment of a binding device BD110, made in accordance with the present invention. The binding device BD110 is for use on the ski devices SK10, SK110, and SK210 to hold the devices SK10, SK110, and SK210 to the rider 1 when the rider 1 is using the devices 10, 100, 200, and 300 for extreme action sports in a hydroplane environment, as discussed above. The binding device BD110 is similar to snow ski bindings in use on snow skis. The binding device BD110 does not include the feature of braking levers as conventional bindings do in case the ski comes off the rider 1. It should be appreciated that binding device differs greatly from convention snow ski binding device in thickness of materials used in construction, gauge and tension of springs and release mechanisms, drain ports for fluid displacement, and overall weight of binding. Further, it should be appreciated the one of the greatest differences in binding device compared to conventional snow ski binding device relates to release and securing tension rates for safely securing and releasing boot of user or rider which in hydroplane environment skim sport and physics of energy compared to snow skiing down a mountain and the physics of energy in that activity. Further, this ski device binding in this invention could not legally be used or mounted on snow skis or water skis and be legally or safely used in sport of snow skiing or water skiing. The sole and intended purpose and function of this ski binding invention is for use with extreme hydroplane skim skis use in the sport of extreme hydroplaning action extreme sport and hydroplane embodiment modules as described in this invention. Further, the binding device in this invention does not have any breaking device feature as is the case with conventional snow ski bindings.

[0208] The binding device BD110 includes a sole portion BD112 and a toe portion BD130. The toe portion BD130 includes a catch BD122, a body BD123, an adjustment member BD131 and an adjustment sight gauge BD127. The sole portion BD112 includes a catch BD124, two side portions BD118, and a lock lever BD116. Both the sole portion BD112 and the toe portion BD130 include a plurality of mounting fasteners BD120.

[0209] The adjustment member BD131 allows the rider 1 to adjust tension in the catch BD122 according to the weight of the rider 1. The lock lever BD116 is rotatably connected to the sole portion BD112, so that when not in use the catch BD124 is in a first or unlocked position. After the rider 1 place a foot with a proper boot, to be discussed below, into the binding device BD110, the rider 1 presses the lock lever BD116 to a second or locked position moving the catch BD124 tight against the foot of the rider 1.

[0210] The binding device BD110 in the present embodiment is preferably constructed out of individually or in combination, metals, alloys, plastics, plastic composites and rubber. It should be appreciated however, that in other various exemplary embodiments, other materials common in the art may be used.

[0211] It should be appreciated that the tension settings (or DIN settings) are different for the extreme hydroplaning skim sports and activities contemplated by the present invention than they would be for snow skiing for example. Hydroplane

binding devices, made in accordance with the present invention cannot be utilized with other sports such as water or snow skiing with the same DIN settings. It is important to note that professional or commercial ski shop technician could not, under current laws, legally mount for liability reasons hydroplane binding device on snow or water skis due to possible serious injury or death resulting from binding not "certified" for use in snow or water skiing sports. The amount of torque required to release the boot is adjusted by turning a screw on the toe and heel piece. This is called the DIN setting. The correct DIN setting is based on height, weight, ski boot sole length, the skiing style of the skier (cautious, average, or aggressive) and, age (if the skier is 50 years old or older). The DIN is usually set by a technician when skis are rented or bought. Adjusting a binding without the proper test equipment can cause problems with release and may be dangerous to the skier. This is due to the fact that a binding with a higher DIN setting than what is stated by DIN tension setting schedule could keep the boot of user in the binding and not release as intended, therefore causing serious injury or death to user in the event of a fall. Further, a DIN setting lower than DIN tension setting schedule could cause boot of user to prematurely release under minimal tension therefore causing serious injury or death to user.

[0212] FIG. 58 is a side view of a boot device SB10 made in accordance with the present invention. The boot device SB10 is for use in binding device BD110. The boot device SB10 is similar in appearance and use as a conventional ski boot. The boot device SB10 comprises a shell member that includes a toe portion SB12, a heel portion SB14, two side portions SB15, an ankle portion SB16, and a calf portion SB18. Connected to the side portions SB15 is a first adjustable strap SB20 and a second adjustable strap SB22. The calf portion SB18 has a third adjustable strap SB24 disposed on it. The adjustable straps SB20, SB22 and SB24 are as typical for conventional ski boots. The boot devices made in accordance with the present invention are preferably made from plastic composites, neoprene, rubber, foam, and metal. Other materials common in the art can be used such as carbon fiber, Kevlar, carbon graphite, and alloys, canvas, nylon, ballistic nylon.

[0213] The calf portion SB18 is rotatably connected to the ankle portion SB16 by the pin SB36. The side portions SB15, the ankle portion SB16 and the calf portion SB18 have a plurality of orifices SB32 disposed throughout the portions SB15, SB16 and SB18 to reduce weight and expedite the removal of water. This is different from conventional ski boots, which are solid and trying to keep warmth in. Additionally, the side portions SB15 have an opening SB34 near the toe portion SB12. The boot device SB10 further includes a calf strap SB26 disposed on the calf portion SB18 above the third strap SB24.

[0214] The boot device SB10 further includes an insert or first liner SB28 and a second liner SB30. The liners SB28 and SB30 provide protection to the leg of the rider 1 from the boot device SB10. The liners SB28 and SB30 are a foam material common in the art. Alternatively, the liners could be of other materials common in the art such as for example neoprene, faux fur, canvas and nylon.

[0215] Additionally the boot device SB10 includes a first catch area SB38 disposed on the toe portions SB12 and a second catch area SB36 disposed on the sole portion SB14. The catch area SB38 is operably configured to engage the catch BD122 of the toe portion BD130 of the binding device

BD110. The second catch area SB36 is operably configured to engage the catch BD124 of the sole portion BD112 of the binding device BD110. Hydroplaning boot devices made in accordance with the present invention are different from conventional snowboarding boots in that they are lighter in weight, easier to walk in due to flexibility in heel, overall flexibility due to softer overall shell design and further they include numerous orifices to expedite removal of liquid. Further, it should be appreciated that the boot in this invention could be made of various materials and constructed in a manner manually, injection molded, or a combination thereof which allows for boot to be temporarily or permanently mounted to the ski or board device in this invention.

[0216] FIG. 59 is a side view of a boot device SB110 made in accordance with the present invention. The boot device SB110 is for use in binding device BD10. The boot device SB110 includes a toe portion SB112, a heel portion SB114, two side portions SB115, an ankle portion SB116, and a calf portion SB118. Connected to the side portions SB115 is a first adjustable strap SB120 and a second adjustable strap SB122. The calf portion SB118 has a third adjustable strap SB124 disposed on it. The adjustable straps SB120, SB122 and SB124 in the present embodiment use hook and loop fasteners, however it should be appreciated that in other various exemplary embodiments, other adjustable straps common in the art may be employed. The boot devices made in accordance with the present invention are preferably made from Plastic composites, neoprene, rubber, foam, and metal, either individually or in combination. Other materials common in the art can be used such as carbon fiber, Kevlar, carbon graphite, and alloys, canvas, nylon, ballistic nylon.

[0217] The calf portion SB118 is connected to the ankle portion SB116. The side portions SB115, the ankle portion SB116 and the calf portion SB118 have a plurality of orifices SB132 disposed throughout the portions SB115, SB116 and SB118 to reduce weight and expedite the removal of water. The boot device SB110 further includes a calf strap SB126 disposed on the calf portion SB118 above the third strap SB124.

[0218] The boot device SB110 further includes a liner SB128. The liner SB128 provides protection to the leg of the rider 1 from the boot device SB110. The liner SB128 is a foam material common in the art. Alternatively, the liner could be of other materials common in the art such as for example neoprene. In some variations of invention ski boot models, inner boot is made similar to water sock or water sport shoe and as such, can be removed from boot shell and used for casual walking in on land or in water comfortably and safely.

[0219] FIG. 60 is a perspective view of a pole device P10, made in accordance with the present invention. The pole or balance pole device P10 includes a pole member P12 having a first end P14 and a second end P16, wherein the first end P14 and the second end P16 define a length P18. A handle P20 is disposed at the first end P14. The handle includes a strap P22, which is optional. Disposed at the second end P16 is a contact member P24.

[0220] In the present embodiment the pole member P12 is constructed out of materials common in the art of make ski poles. Further, hydroplane extreme skim ski pole can be made out of injection molded composites, carbon fiber, fiberglass, alloys, and other materials common in the art. The rider 1 uses the pole device P10, as desired, when using the hydroplane extreme sport device 10 to aid in maintaining balance, as a conventional ski pole would be used. The length P18 in the

present embodiment is preferred to be about 40 inches. However, it should be appreciated that in other embodiments the length may be longer or shorter as determined by the rider 1 preferences and size, as well as tricks and maneuvers to be performed, the type of hydroplane event participating in such as “big air”, quarterpipe, halfpipe, or cascade stair-step slope-style.

[0221] The contact member P24 in the present embodiment has a concave shape, in that the contact member P24 cups in the direction from the second end P16 towards the first end P14. The contact member is preferably made from a rubber composite. However, it could also be made from rubber, plastics, neoprene or other composites. The contact member P24, when in use comes in contact with the skim surface 43 of the device 10. The contact member P24 is constructed of a rubber material so that the skim surface 43 is not damaged by the balance pole P10. The pole member P12, while in the present embodiment does not extend beyond the contact member P24, it should be appreciated that in other various exemplary embodiments, the pole member may extend beyond the contact member.

[0222] The present invention further relates to an activity of water skimming in an extreme manner, either professionally or as an amateur, using the devices described above. The rider 1 would use the equipment described above on one of or a combination of the devices described above to perform tricks, maneuvers, and athletic abilities such as but not limited to 1080 degree spins, flips, twists, toe-grabs, etc. The activity of water skimming could be performed indoors or outdoors and either publicly before an audience or privately. The water skimming activity could also be judged, wherein the rider 1 earns points or other awards based on factors such as speed, time, proficiency of performance, degree of difficulty, artistic style and amplitude.

[0223] The water skimming activity can be a single event or multiple events where the rider 1 score is accumulated. Further the water skimming activity can be operated as a team sport wherein each individual on the team earns points and the total is the team score.

[0224] Still further the water skimming activity can be established as a sport that includes teams with rosters, schedule of competition, a governing body and regulated rules to compete by wherein all competition is performed on the hydroplane environment described herein.

[0225] The present invention includes the method steps for the activity of water skimming comprising the acquiring a hydroplane environment device; acquiring equipment specifically for use on the hydroplane environment; fitting a user with the equipment; acquiring judges to judge the performance of the user 1; hydroplaning down the hydroplane environment on the equipment by user 1 and the user 1 performing athletic maneuver while hydroplaning down the hydroplane environment; receiving a score from the judges based on the performance of the athletic maneuvers by the user 1.

Example Action Hydroplane Gravity System and Calculations

[0226] Part 1: Wide Start/Drop-in Ramp/Slope Dimensions for Ramp Similar to FIG. 1:

[0227] A. Width: 10 ft.

[0228] B. Height: 23 ft. (measured from horizontal/catchment surface vertical to beginning 3' radius to platform)

[0229] C. Drop-in/Start Platform Angle: 7 degrees (40 sq. ft.)

[0230] D. Drop-in/Start Radius: 3' ft. (4.75 Lineal Ft.×10 ft.=47.5 sq. ft.)

[0231] E. Ramp/Slope Angle: 70 degrees (12 L.F.×10 ft.=120 sq. ft.)

[0232] F. Transition Radius: 14 ft. (Approx. 18 L.F.×10 ft.=180 sq. ft.)

[0233] G. Catchment Length: 45 ft. (45 L.F.×10 ft.=450 sq. ft.)

[0234] Part 2: Plumbing System:

[0235] A. Minimum of one Supply Line: 3" in. diameter

[0236] B. Return Lines: Qty. 4=3" in. diameter

[0237] C. Liquid Supply Pump Size: 67,200 GPH or 1120 GPM

[0238] D. Coping Liquid Dispenser: 3" line×10 L.F. (approx. 9

[0239] E. Drains: Qty. 8–12=3" in. (depending on desired range of liquid depth adjustment; see “Part 3, B-4: a., b., & c. below).

[0240] F. Optional Side Liquid Dispensers: (To increase amount of liquid on surface area as user prefers).

[0241] G. Optional Surface Liquid Dispensers: (To increase amount of liquid on surface area as user prefers).

[0242] Part 3: Hydroplane Environment Calculations:

[0243] A. Weir or flow Rates:

[0244] 1. 900 Gallons Per Hour (GPH) or 15 Gallons Per Minute (GPM) for 0.5" in. water liquid depth

[0245] 2. 2400 GPH or 40 GPM for 1" in. water liquid depth

[0246] 3. 4500 GPH or 75 GPM for 1.5" in. water liquid depth

[0247] 4. 6720 GPH or 112 GPM for 2" in. water liquid depth

[0248] B. Preferred Liquid Depth Levels:

[0249] 1. Ramp/Slope Angle: 1" in. depth,

[0250] a. Liquid volume amount: 2400 GPH or 40 GPM×10 ft.=24,000 GPH or 400 GPM.

[0251] b. The 24,000 GPH amount of liquid is supplied through liquid dispenser coping located at top of drop-in/start platform.

[0252] 2. Transition Radius: 1.5" in. (Preferred range 1"-2" in. depth (can vary, see below);

[0253] a. Add 2100 GPH or 35 GPM (difference in weir rate between 1" & 1.5") to 2400 GPH or 35 GPM (amount of liquid already supplied)=4500 GPH or 75 GPM (weir rate for 1.5 in. liquid depth).

[0254] b. 4500 GPH×10 ft.=45,000 GPH or 750 GPM (liquid volume needed at beginning of transition area to provide 1.5" in. liquid depth.)

[0255] c. The 45,000 GPH amount of liquid is supplied through liquid dispensers on sides and transitional surface area or combination of both, with flow rate being controlled with liquid dispenser controls.

[0256] 3. Catchment: 2" in. liquid depth.

[0257] a. Add 2220 GPH or 37 GPM (difference in weir rate between 1.5" & 2") to 4500 GPH or 75 GPM (amount of liquid already supplied)=6720 GPH or 112 GPM (weir rate for 2" in. liquid depth).

[0258] b. 6720 GPH or 112 GPM×10 ft.=67,200 GPH or 1120 GPM (liquid volume needed at beginning of horizontal catchment area to provide 2 in. liquid depth.)

[0259] c. TOTAL=67,200 GPH or 1120 GPM Liquid Volume Pump Size Needed

- [0260] 4. Catchment Depth Control Options:
- [0261] a. OPTION A.—Each return line has one valve in line which can be adjusted to affect liquid level in horizontal catchment area. (i.e. close to create more “back-pressure” which raises the level (i.e. increases depth) of liquid in horizontal catchment area or open valve to reduce “back-pressure” increasing drainage flow which reduces liquid level (i.e. shallower depth) in horizontal catchment area).
- [0262] b. OPTION B.—Side barrier (gunwales) are adjusted manually, electronically (with motor), or hydraulically up and down vertically to adjust depth of liquid in catchment area according to preference. The liquid would drain over the top edge of side barrier into trough (or catch basin, tank, gutter, or chute) attached to return lines to liquid supply source.
- [0263] c. Attributes of liquid depth: (1"-2.5" in.=more velocity/less control for user performing air maneuvers over jump or halfpipe, or quarterpipe; 3"-6" in.=less velocity/more control for user or rider to “pop” or “Ollie” board or ski off of hydroplane surface into air for tricks & maneuvers).
- [0264] Part 3: Liquid Volume Calculations:
- [0265] A. Cubic Feet of Liquid Needed to Supply Preferred Depths at Various Area of Embodiment
- [0266] 1. Drop-in/Start Platform, Radius Drop-In Transition, Angled Ramp/Slope=207.5 sq. ft. (total area sq. ft. \times 0.0834 (1" depth divided by 12 \times 7.5 (cu. Ft. factor) =129.79 gallons (rounded up to 130 gal cu. ft.)
- [0267] 2. Transitional 14' ft. radius section of embodiment FIG. 1=180 sq. ft. (area) \times 0.125 (1.5" depth divided by 12) \times 7.5=168.75 (rounded up to 170 gal cu. ft.)
- [0268] 3. Catchment (area)=450 sq. ft. (area) \times 0.167 (2" depth divided by 12) \times 7.5=563.62 (rounded up to 564 gal cu. ft.)
- [0269] 4. Total gal. cu. ft.=864
- [0270] 5. Multiply 864 \times 3 (“rule of thumb” factor for amount of liquid supply with short supply & return lines, which is adjusted up or down according to volume of liquid in plumbing system, which one skilled in the art can calculate)=2,592 gallons of water liquid needed to supply plumbing system in this example. Can be adjusted higher for preference.
- [0271] Part 4: Summary:
- [0272] A. Hydroplane Gravity Embodiment:
- [0273] 1. Establish hydroplane embodiment (i.e. embodiment module, injection molded module, device, etc.)
- [0274] 2. Establish support for hydroplane embodiment surface (i.e. injection molded module, structure, ground, scaffolding, etc.)
- [0275] 3. Implement plumbing system (as described) according to hydroplane environment surface size, style, preferred liquid depth, and maneuvers being performed using flow rates skilled in the art.
- [0276] 4. Turn on pump(s).
- [0277] 5. Begin user or rider participation.
- [0278] B. Additional Hydroplane Embodiments:
- [0279] 1. Hydroplane environment can be provided on other additional environments according Part 4: A, 3.
- [0280] 2. Applicable to various hydroplane gravity module, structures, or device embodiments in forms such as: drop-in/start slope/ramp; quarterpipe, halfpipe, ramp-to-ramp (“big air”), cascade/stair-step (“slopestyle”),

jump, box, rail, bowl, half-frustum conical, and half-frustum conical with horizontal catchment area feature.

- [0281] 3. Hydroplane gravity environment is provided using hydroplane embodiment module, device, and/or structure with hydroplane gravity environment surface ranging from fifteen (15) degrees to 77 degrees when user is hydroplaning from gravity or human energy (ie. traveling DOWN angle of embodiment). In shorter distances, hydroplane surface degree angle can increase to 80 degrees.

- [0282] 4. Hydroplane gravity environment surface angle can increase to 90 degrees (vertical) when user or rider is traveling/transitioning UP hydroplane surface area, for example, when user or rider is using halfpipe, quarterpipe, or jump embodiment to perform maneuvers and tricks.

[0283] While this invention has been described in conjunction with the specific embodiments outlined above, it is evident that many alternatives, modifications and variations will be apparent to those skilled in the art. Accordingly, the preferred embodiments of the invention, as set forth above, are intended to be illustrative, not limiting. Various changes may be made without departing from the spirit and scope of this invention.

What is claimed is:

1. A hydroplaning device for a rider on hydroplane equipment to perform liquid sport athletic maneuvers, comprising:
 - a support member having a height relative to the ground and a slope;
 - a surface member disposed on the support member along the slope, wherein the surface member forms at least an angled surface and a catchment area;
 - a liquid circulation system, having a liquid source having a liquid, at least one feed line and at least one return line, the liquid source being in fluid communication with the at least one feed line and the at least one return line being in fluid communication with at least one of the liquid source and a disposal location;
 - at least one liquid dispenser disposed adjacent to at least one of the support member and the surface member, the at least one liquid dispenser being in fluid communication with the at least one feed line;
 - at least one drain disposed at least one of adjacent to and within the catchment area of the surface member and being in fluid communication with the at least one return line; and,
 wherein when the device is in use the liquid from the liquid source will flow through the at least one feed line, out the at least one liquid dispenser, down the angled surface at a sufficient rate so as to create a hydroplane layer of liquid on the angled surface to the catchment area, through the at least one drain and to the at least one return line, and wherein the rider while on the hydroplane equipment will hydroplane on the hydroplane layer as gravity pulls the rider down the angled surface.
2. The hydroplaning device, as recited in claim 1, wherein the at least one liquid dispenser disperses the liquid through the surface member.
3. The hydroplaning device, as recited in claim 1, wherein the liquid is water.
4. The hydroplaning device, as recited in claim 3, wherein the liquid circulation system maintains at least one half inch of water on the surface member.

5. The hydroplaning device, as recited in claim 1, wherein the angled surface of the surface member includes a plurality of raised dimples.

6. The hydroplaning device, as recited in claim 1, wherein the slope of the support member includes a concave radius.

7. The hydroplaning device, as recited in claim 1, wherein the support member is a downhill gradient of earth.

8. The hydroplaning device, as recited in claim 1, wherein the surface member further includes a width, a first end and a second end and the at least one dispenser is disposed adjacent the first end along the width.

9. The hydroplaning device, as recited in claim 1, wherein the surface member further includes a length and the at least one dispensers is disposed along a portion of the length.

10. The hydroplaning device, as recited in claim 1, wherein:

the at least one dispenser is a plurality of dispensers; and the surface member further includes a length and a width and the plurality of dispensers are disposed along a portion of the length and a portion the width.

11. The hydroplaning device, as recited in claim 1, wherein the at least one dispenser is disposed within the surface member.

12. The hydroplaning device, as recited in claim 1, wherein the surface member further includes a plurality of raised bumps.

13. The hydroplaning device, as recited in claim 1, wherein the support member includes a wood frame construction.

14. The hydroplaning device, as recited in claim 1, wherein the support member and the surface member include a generally half-frustum conical shape upon which the hydroplane layer of liquid is disposed.

15. The hydroplaning device, as recited in claim 1, further including a jump module and a landing module, wherein the jump module includes a support member, a surface member and plumbing operably configured to connect to the liquid circulation system; and wherein the landing module includes a landing support member, a surface member and plumbing operably configured to connect to the liquid circulation system.

16. The hydroplaning device, as recited in claim 1, wherein the liquid source includes a natural river.

17. A device for creating a hydroplane skim surface for allowing a rider to hydroplane on hydroplane equipment, comprising:

a surface member having an angle relative to the ground; at least one liquid dispenser adjacent on the surface member; and

a liquid feed being in fluid communication with the at least one liquid dispenser, wherein when the hydroplane surface device is in use, liquid from the liquid feed will flow through the at least one liquid dispenser, down the surface member at a sufficient rate so as to create a hydroplane layer of liquid on the surface member, and wherein

the rider while on the hydroplane equipment will skim on the hydroplane layer as gravity pulls the rider down the surface member.

18. The device, as recited in claim 17, wherein the liquid is water.

19. The hydroplane device, as recited in claim 18, wherein the at least one liquid dispenser when in use, maintains at least one half inch of liquid on the surface member.

20. The device, as recited in claim 17, wherein the surface member includes a plurality of raised dimples.

21. The device, as recited in claim 17, wherein the surface member further includes a width, a first end and a second end and the at least one liquid dispenser is disposed at the first end along the width.

22. The device, as recited in claim 17, wherein the surface member further includes a length and the at least one liquid dispenser is disposed along the length.

23. The device, as recited in claim 17, wherein the surface member further includes a length and a width and the at least one liquid dispenser is a plurality of dispenser being disposed along the length and the width.

24. The device, as recited in claim 17, wherein the at least one liquid dispenser is disposed within the surface member.

25. The device, as recited in claim 23, wherein the at least one liquid dispenser includes an adjustable flow rate nozzle.

26. An extreme action sport method comprising the steps: acquiring a hydroplane environment device having at least and angled surface;

flowing a liquid over the angled surface of the hydroplane environment device to create a continuous hydroplane surface;

acquiring hydroplane sports equipment for use on the hydroplane environment device;

fitting a rider with the hydroplane sports equipment; and,

disposing the rider at an elevated portion of the angled surface of the hydroplane environment devices and allowing gravity to pull the rider down the hydroplane environment device such that the rider hydroplanes on top of the continuous hydroplane surface with the hydroplane sports equipment.

27. The extreme action sport method, as recited in claim 26, wherein the hydroplane environment comprises a surface member; a plurality of dispensers disposed on the surface member; and a liquid circulation member in fluid communication with the plurality of dispensers.

28. The extreme action sport method, as recited in claim 26, wherein the hydroplane sports equipment comprises a board member having a first end, a second end defining a length, a thickness, a first surface and a second surface, wherein the first end and the second end have a bend in the direction from the second surface towards the first surface; a plurality of grooves disposed on the first surface, near the first end and generally perpendicular to the length.

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