Sept. 12, 1933.

J. W. LIPPINCOTT

1,926,780

ENDLESS WATER COURSE

Filed Nov. 11, 1931

2 Sheets-Sheet 1

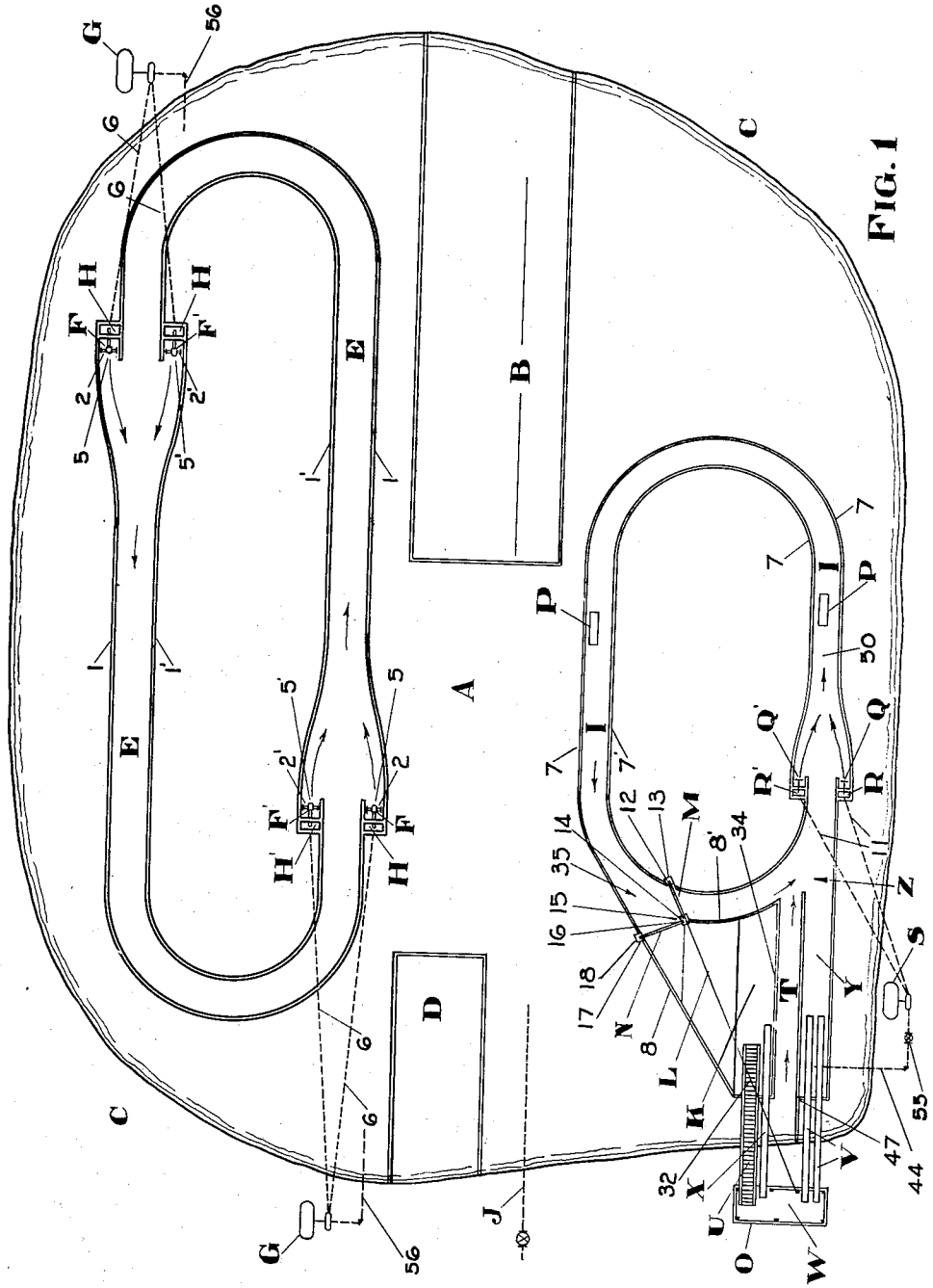

FIG. 1

INVENTOR.

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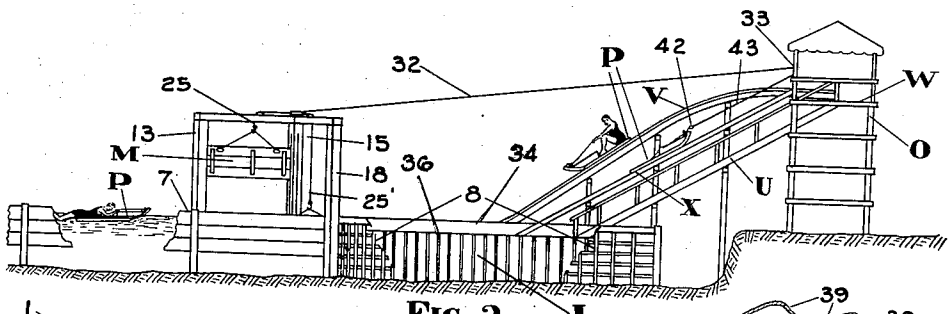

FIG. 2

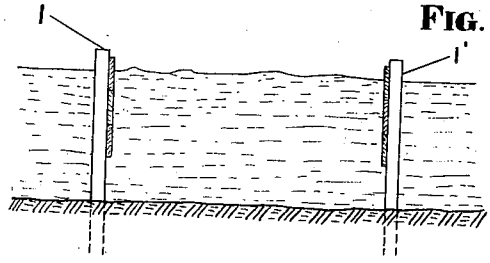

FIG. 3

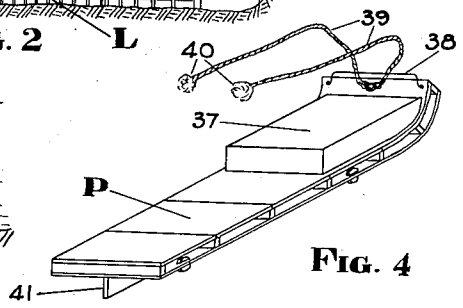

FIG. 4

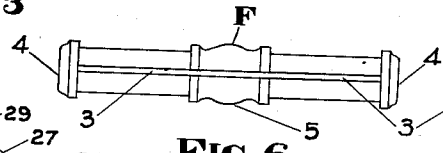

FIG. 6

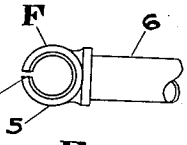

FIG. 7

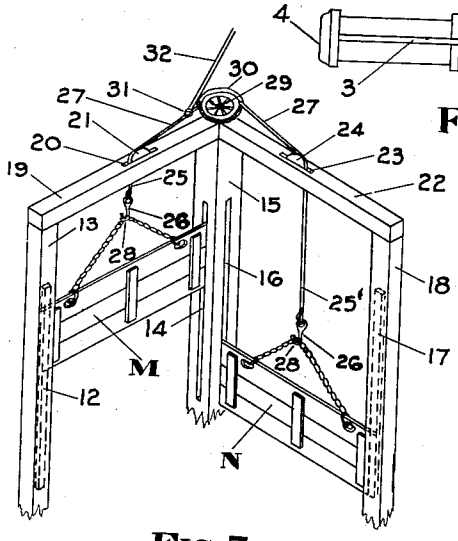

FIG. 5

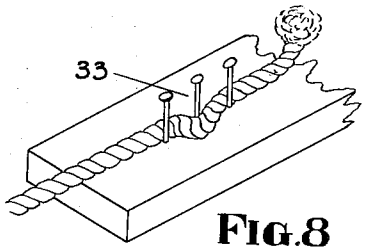

FIG. 8

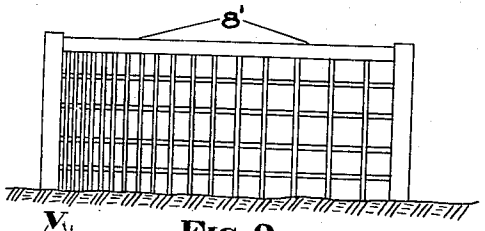

FIG. 9

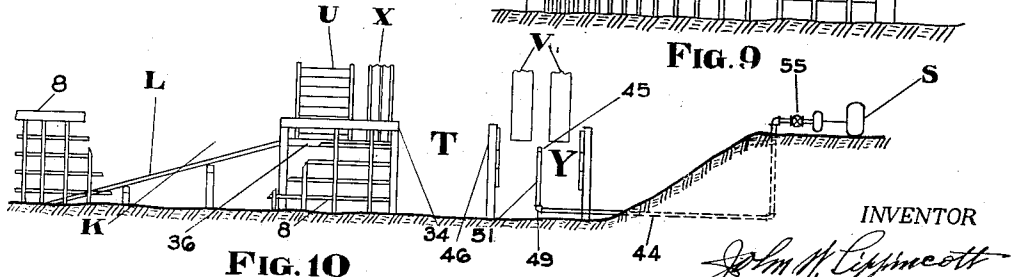

FIG. 10

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Patented Sept. 12, 1933 1,926,780

UNITED STATES PATENT OFFICE

1,926,780

ENDLESS WATER COURSE

John W. Lippincott, Little Rock, Ark.

Application November 11, 1931
Serial No. 574,375

9 Claims. (Cl. 104—73)

My invention relates to aquatic sports, and the principal object is to provide means whereby tobogganists may glide down the usual natatorium slide on a buoyant toboggan sled, plunge into standing water, and by virtue of their momentum coast into an endless stream of water, holding onto a rung, or other suitable hand hold attached to said toboggan sled, and coast without effort round and round the toboggan water course, until an attendant stops them by manipulating gates to obstruct the toboggan water course, and shunt the current, said tobogganists and their sleds into a landing compartment, and onto a landing dock which is located near a stairway leading up to the top of a tower where they may repeat the glide by paying another fee. Another object is to dispense with the sleds when so desired and utilize the course for swimming, and I attain these and other objects by the means illustrated in the accompanying drawings in which:

Fig. 1 is a plan view of an artificial pond in which is installed an endless down stream swimming course, and endless, but optionally terminable toboggan water course.

Fig. 2 is a side view of a tower, a slide, a toboggan sled, and a portion of the toboggan water course with a portion of the wall removed.

Fig. 3 is an end view of a portion of the walls of either the endless down stream swimming course, or of the toboggan water course.

Fig. 4 is a perspective of a water toboggan sled.

Fig. 5 is an elevation view of reciprocally interconnected gates as they appear when looking down stream from the arrow 35, and the means by which these gates are manipulated.

Fig. 6 is a front view of an elongated nozzle.

Fig. 7 is an end view of Fig. 6, with its cap removed.

Fig. 8 is a perspective view of a snubbing device.

Fig. 9 is a front view of a reticulated wall.

Fig. 10 is a detail end view of a portion of Fig. 1, showing several parts and fragments of other parts pertaining to the toboggan water course with wall and water removed.

Similar letters and numerals refer to similar parts throughout the several drawings.

Fig. 1 illustrates an artificial pond designated by A, graded to various depths for various purposes. The portion designated by B is shallow water and is intended for children who cannot swim, and should be one foot deep at one end and slope to eighteen inches, or two feet deep at the other end. All other portions should be four feet deep, except the portion designated by D which should be ten feet deep for divers. Also the banks may slope from the bottom at any desired angle to at least six inches above high water.

In Fig. 1 E designates an endless down stream swimming course, and is bounded by walls 1 and 1' to confine the current. F and F' are nozzle headers used herein to produce the current, and each is composed of two pieces of ordinary galvanized pipe 2 and 2' which are slit from end to end as shown in detail Figures 6 and 7. The slits are designated by 3 and should be one sixteenth of an inch wide. The outer end of each pipe must be closed by a plug or cap 4, but the inner ends of these two pipes are provided with threads and screw into opposite ends of a T 5, thus forming a nozzle header designated by F which connects through said T with the discharge line 6 of a pump G provided with a suction line 56. The T may also be slit, so that when the pump G is actuated a stream will emerge from the slits 3 as a sheet of water as wide as the nozzle header is long. The nozzle header F is positioned in a nozzle chamber H which is recessed into the right or outside wall 1 of the endless down stream swimming course E, and a similar nozzle header F' is positioned in a similar nozzle chamber H' recessed into the left of inner wall 1' and similarly connected with the same pump. As shown in Fig. 1 another similar current producing means may be installed in the other channel of the endless down stream swimming course if so desired. Any desired angle as to the horizontal of the nozzle stream may be afforded by slightly screwing or unscrewing the nozzle pipes. There is no adjustability of the aperture (slits) provided for, as nozzles of this kind can be made so much cheaper than any other that it is thought it will be more expedient to make and keep on hands several nozzle headers with various widths of apertures, as a change can be made in a few minutes.

The reason for having nozzle headers positioned on the sides as shown herein instead of at the ends of the stretches is that a stream of water that is discharged at the end (beginning of a stretch) will have to have such velocity as will carry it beyond the curve of the rounded corner of the inner wall before it contacts the surface in order to prevent an eddy at said corner; therefore it will have to span a much greater distance than the course is wide, hence the width of swimming courses thus serviced must be very limited, as the swimmers have to go through the zone where the nozzle stream contacts the surface, and if the impinging nozzle stream is too severe the swimmers will object, but if the swimming course is serviced by one or more pairs of nozzle headers positioned on the sides as shown herein the nozzle velocity may be reduced to almost nothing regardless of the width of the swimming course. The combined length of each pair of nozzle headers should aggregate the width of the swimming course, in

order to avoid as much as possible the lessening of the surface current by divergence.

The object of featuring the endless down stream swimming course E herein is to show that the combination of swimming, wading, diving and tobogganing makes a well balanced and therefore, a very desirable plant, and besides the nozzles and their positioning as shown herein are equally applicable for either swimming or tobogganing water courses.

The toboggan water course I which for the sake of brevity will hereinafter be referred to as the toboggan course and the endless down stream swimming course E will hereinafter be referred to as the swimming course are installed in an artificial pond A, which is graded to various depths for the various purposes. The walls 1 and 1' are constructed of wood and need to only extend from six inches above the surface to two or three feet below.

For the sake of endurance concrete is the ideal material to use for walls and floor for all purposes herein contemplated.

Should it be decided to install a swimming course, or a toboggan course, or a combination of both in an artificial pond, a plot of ground should be selected near an adequate supply of clear water, easily accessible to patrons who may come in street cars, trains, busses and automobiles, and with plenty of parking space for the latter.

A valved drainage line J should be provided at the lowest level of the wadable water. If a diving compartment is included it should be about ten feet deep, hence there would be six feet of water left in this deep part when the rest is emptied, unless the drainage line J is set at a lower level, but I think that in most cases it will be more expedient to pump out this six feet of water, as deep drainage lines are frequently a source of much inconvenience and expense.

As shown at the bottom of Fig. 1 the toboggan course I comprises walls 7 and 7', and like the walls 1 and 1' in Fig. 3 are made of lumber, extending from six inches above the surface to two or three feet below the surface (there is however, no objection to these walls being made water tight from top to bottom), a landing compartment K bounded on the right side by the wall 7 provided with a reticulated panel 8, and the left side is bounded by a short reticulated wall 8', and the down stream end is bounded by a header 34. This landing compartment includes a landing dock L. Said toboggan course further comprises gates M and N, tower O, toboggan sleds P, nozzle headers Q and Q' respectively positioned in nozzle chambers R and R' respectively recessed into the walls 7 and 7', a pump S provided with discharge lines 11 connected with said nozzle headers, a plunging compartment Y, and a spillway T. All of these parts function and co-operate with each other as follows: Viz. as shown in detail Fig. 5 the gate M slides up and down in a groove 12 in the column 13 set into the wall 7' and a groove 14 in the column 15 set into the reticulated wall 8', and the gate N slides up and down in another groove 16 in the column 15 and a groove 17 in the column 18 set into the wall 7. A beam 19 extends from the top of column 13 to the top of column 15 through the center of which is mortised an opening 20 to provide a bearing for a grooved pulley 21. A similar beam 22 extends from the top of column 15 to the top of column 18 which is similarly provided with an opening 23 to provide a bearing for a grooved pulley 24. The gates M and N are respectively provided with suspension chains 25 and 25' respectively attached to said gates about two feet from each end and each suspension chain is provided with a hook 26. The gates M and N are reciprocally connected by a chain 27 provided on each end with an eye 28, one end of said chain 27 extends through the opening 20 in beam 19 to engage the suspension chain 25 of the gate M and the other end of chain 27 extends through the opening 23 in beam 22 to engage the suspension chain 25' of the gate N. This interconnecting chain 27 therefore works over the grooved pulleys 21 and 24, and to hold it in proper alignment it works around another grooved pulley 29 provided with a guard 30, said pulley 29 being positioned horizontally over the column 15. The gate M should be heavier than the gate N and a stop 31 is attached to the interconnecting chain 27 at such a point as will normally permit the gate M to rest with its upper edge six inches above the surface when said stop 31 contacts with the top side of the beam 19, and when said gate M is down it should extend to two feet below the surface, and it should be heavy enough when down to hold the gate N so that its lower edge will be two feet above the surface. A rope 32 is connected to said stop 31 and extends in a straight line to the tower O where an attendant may pull on it to open said gate M and automatically close the gate N. Said gates M and N may be held in this position by engaging the rope 32 with a snubbing device 33 as shown in Fig. 8. Obviously a windlass or block and tackle may be utilized to engage the rope 32 and open the gate M.

In order to let the gate M down it will only be necessary to disengage the rope 32 from the snub and it will descend by virtue of its weight and automatically pull the gate N up.

When the pump S is actuated and the gate M is up an endless stream of water will be produced in the toboggan course on which the tobogganists may coast round and round until an attendant disengages the rope 32 from the snub 33 to cause the gate M to descend and obstruct the toboggan course, and by virtue of its greater weight the gate N is automatically raised, which shunts the current and the tobogannists and their sleds from the toboggan course into the landing compartment K.

The landing compartment K comprises an obtuse area bounded on the right by the wall 7, but which at this point should be provided with a reticulated panel 8 extending from six inches above the surface to the bottom of the pond and from the column 18 to a header 34, which bounds the down stream end of the landing compartment, and the left side of said landing compartment is bounded by a reticulated wall 8', as shown in Fig. 9, and extends from the column 15 to the header 34 and from six inches above the surface to the bottom of the pond. The landing compartment K is provided with a landing dock L, starting at the bottom of the pond near the gate N and sloping upward for about twenty feet to within a foot of the surface and then extending as a submerged flat platform 36 to the header 34. The header 34 is solid from six inches above the surface to the submerged platform 36 and then reticulated to the bottom of the pond. The landing dock L as shown in Fig. 10, is merely a sloping floor to where it connects with the submerged platform 36 and is as wide as the landing compartment K, and said landing dock and its platform are composed of boards spaced about

one-half inch apart, and may be laid laterally or longitudinally, as shown in Fig. 2.

The object in extending the header 34 and the reticulated wall 8' and the reticulated panel 8 to the bottom is to prevent patrons from intentionally, or accidentally diving under the landing dock L where they might lose their sense of direction and possibly be drowned.

If the walls of the landing compartment K and the floor of the landing dock L were all solid no current would pass into, nor through said landing compartment, as it would bank up and then back up for a considerable distance up stream when the gate M is closed and the gate N is open, and thus defeat this very novel and useful feature which is a great convenience to the tobogganists, hence the necessity of the reticulated walls and spaced floor boards which function as follows: Viz, when the gate M is closed and the gate N is open the current will flow unimpeded into the landing compartment and carry the coasting tobogganists and their sleds with it, but as soon as the current passes the open gate N its divergent property becomes effective and it immediately commences to flow through the reticulated wall 8' and the reticulated panel 8 in wall 7 and thereby tends to dissipate said current. If the reticulated spaces are too coarse, the current will be dissipated too quickly and the tobogganists will be stopped before they reach their desired landing point, which is near the stairway U, also if the current is dissipated too rapidly the tobogganists will "side swipe" the walls which is objectionable, hence the object of these reticulated walls and spaced floor boards is to gradually dissipate the current and gradually bring the tobogganists to a stop near said stairway U which is one of the principal features of this invention. The reticulations should therefore, be very fine near the gate N and gradually become larger towards the header 34. I do not know of any law of nature by which the rate of dissipation can be figured exactly, but it will be safe to make the reticulated area ample to begin with, for if too great some portion of each or either wall can be boarded up and thus bring about the desired results.

The toboggan course need not to be more than eight feet wide, and the entrance to the landing compartment K at the gate N should be the same, but the reticulated wall 8' and the reticulated panel 8 in wall 7 should form an obtuse area from the gate N to the header 34, so that the down stream end of the landing compartment may be two or three times as wide as it is at the beginning, which is another considerable advantage in the matter of decreasing the speed of the tobogganists preparatory to landing, as by divergence of the surface current over an area two or three times wider than the gate will lessen its velocity one-half or more, and therefore materially lessen the speed of the tobogganists, even if the boundary walls were solid. In the latter case water will pass through the interstices of the floor of the landing dock L, and the tobogganists and their sleds will be stopped by the lessening of the current on account of its divergence over the greater area and the tendency to bank up against the header 34, which would probably be before they reached the stairway, hence the advisability of the reticulated walls.

The current which passes through the reticulated wall 8' flows directly into the main channel of the toboggan course, but the current which passes through the reticulated panel 8 in wall 7 and the water which is forced through the interstices of the floor of the dock L by gravity flows into the spillway T, which is formed by the wall 46 and the landing compartment header 34, and thence also into the main channel of the toboggan course.

As shown in detail side view Fig. 2 and detail end view in Fig. 10 the tower O may be located on land, or over the water far enough away on a longitudinal line with a straightaway stretch 50 of the toboggan course, so that the lower ends of one or more slides V will terminate at or near the surface of the water in the plunging compartment Y. The speed of the gliders as they plunge into the water will of course depend on the height of the tower and the length of the slides, but the gliders should contact the water at such a point as will enable them to coast by their momentum to the point Z which is the intersection of the plunging compartment with the main channel of the toboggan course, and their speed at this point should not be greater than that of the coasting tobogganists who may be passing this intersection at the same time in order to prevent injuries from possible collisions with said coasting tobogganists. The water in the plunging compartment will normally be of the status of standing water, but if desired a reverse current may be afforded by positioning a vertical joint 51 of the suction line 44 of the pump S just below the surface under the lower ends of the slides V to tend to conteract the speed of the gliders. The suction line 44 may run horizontally on or under the ground to connect through an L 49 with the vertical joint 51 so as to make it adjustable as to the vertical in order to lower the intake when the surface happens to be below its normal level and thereby make said intake adjustable as to depth submergence. The suction line intake should, of course, be provided with a screen 45. Also the suction line should be provided with a choke valve 55 so that the current of the toboggan course may be increased, or decreased as may be desired from time to time.

As shown in detail in Fig. 4, the toboggan sled P is of the usual type, except that in this case it is provided with a float 37 near the front-end, which may be made of sheet cork, an inflatable bag, or an air-tight light metal box. The object of this buoyancy is to enable the tobogganists to keep their heads well above the surface during their coasting periods. These sleds are also provided with hand-holds, which may be a rung 38 near the front-end to afford hand-holds for two, or two ropes 39 may be attached to the front-end for the same purpose. If ropes are used they should be provided with knots, or knobs 40 on their loose ends so they will not easily slip through the hands of the tobogganists. Each sled is also provided with a stabilizer 41, which consists of a strip of metal attached to the middle of the underside and running lengthwise of the sled to lessen the tendency of turning sideways.

The tower O and the slides V are of the usual type generally used at swimming resorts.

The stairway U rests on the landing dock L and extends to the platform W on the top of the tower O.

The sled skidway X rests on the landing dock L and extends to the platform W on the top of the tower O. The sleds P may be pulled up to the platform W on this sled skidway by an attendant on said platform after the tobogganists have been required to connect them to a hook 42 at-

tached to a rope 43. This hook should be heavy enough to slide down the sled skidway of its own weight to a point conveniently accessible to the tobogganists, and the rope 43 should be just long enough to permit the hook to reach this point when the upper end is fixed to the tower so that the attendant will have nothing to do but pull up and detach the sleds.

A synopsis of what I believe are new, and novel, and useful features as herein disclosed, are an endless but terminable toboggan water course, convertible into a swimming course provided with new and very efficient means to produce an endless current on the surface thereof, in combination with a tower, and one or more slides down which tobogganists may glide on sleds made buoyant by a float and provided with hand-holds and a stabilizer, plunge into a plunging compartment, coast into the current in the main channel by their momentum, and coast round and round on said current until an attendant manipulates gates to obstruct the toboggan course and shunt the current and said tobogganists and their sleds into an obtuse landing compartment and onto a landing dock provided with reticulated walls and spaced flooring to diverge and dissipate the current in said landing compartment, and thereby gradually, but positively stop said tobogganists nearby a stairway leading up to the top of said tower and whereby paying another fee they may repeat the glide etc.

Having thus described my invention what I claim and desire protected by Letters Patent of the United States is:

1. The combination of an endless water course, with nozzle headers positioned in nozzle chambers recessed into the walls on each side of the water course and opposite to each other to produce current in and throughout said endless water course.

2. The combination of an endless water course, with nozzle headers positioned in nozzle chambers recessed into the walls on each side of the water course and opposite each other to produce current in and throughout said endless water course, and said nozzle headers to be composed of ordinary galvanized water piping whose apertures are slits from end to end of said pipes, and the combined aggregate length of the two headers being as long as the endless water course is wide.

3. The combination of an endless toboggan water course wherein current is produced, with a tower, a slide, and toboggan sleds; each of said sleds being provided with a float, hand-holds and a stabilizing keel, and in further combination with means to shunt the current and the tobogganists and their sleds from the toboggan course into a landing compartment provided with means to dissipate the current in said landing compartment.

4. The combination of a toboggan tower, a toboggan slide and toboggan sleds, with an endless toboggan water course provided with means to produce current therein, and a gate manipulatable to obstruct said toboggan water course, and at the same time automatically open another gate to shunt the tobogganists and their sleds into a landing compartment and onto a landing dock, the side walls of said landing compartment being provided with reticulated panels to permit a considerable portion of the current to pass through said panels, and said landing dock provided with a spaced floor sloping from the bottom to a level platform near, but under the surface, to also permit water to flow through said landing compartment and to gradually, but positively stop the tobogganists near a stairway leading to the top of the tower.

5. The combination of an endless toboggan water course, provided with a pump to produce current therein, with a toboggan tower, toboggan slides and toboggan sleds, also a plunging compartment wherein tobogganists may plunge and by virtue of their momentum coast into the current of the toboggan water course, and the intake of said pump being suitably positioned and adjustable as to depth submergence in said plunging compartment as to optionally afford standing water, or a current to tend to counteract the momentum of the plunging tobogganists.

6. The combination of an endless water course, convertible to optionally afford swimming, or water tobogganing, with elongated nozzle headers composed of two ordinary water pipes slit from end to end and whose outer ends are closed and whose inner ends are threaded and screwed into opposite ends of a T connected with a pump to produce a surface current in and throughout said water course, and said nozzle headers being positioned in nozzle chambers recessed into the walls of said water course in pairs directly opposite each other.

7. In an endless toboggan water course provided with a pump to produce a current in and throughout said toboggan water course, the combination therewith of a screened suction line whose intake is adjustable as to depth submergence.

8. The combination of an endless water course, provided with means to produce a surface current therein, and shiftable gates to optionally afford terminable water tobogganing, with a tower, tobogganing slides, sleds, each provided with a float, hand-holds and a stabilizing keel, a plunging compartment interconnected with said endless water course, the screened intake of a suction line adjustable as to depth submergence positioned in said plunging compartment to partially counteract the momentum of plunging tobogganists when desired, and a landing compartment obtusely formed to permit divergence and therefore, lessening of the current therein, and said landing compartment being provided with reticulated walls to permit dissipation of the current in said landing compartment, and a landing dock within said landing compartment whose floor is spaced to further assist in the dissipation of the current in said landing compartment and to gradually, but positively bring the tobogganists to a full stop near a stairway leading to the top of the tower, said landing dock being sloped from the bottom to a level platform under, but near the surface, and said landing dock being provided with a header at the down stream of said landing dock, and a spillway to receive the current which flows through the spaced floor and the reticulated walls and convey it into the channel of the endless water course.

9. The combination of an endless toboggan water course provided with means to produce current therein, with an interconnected obtusely shaped landing compartment and reciprocally manipulatable gates to intermittently divert said current into said landing compartment and some of it through reticulated side walls of said landing compartment and the rest of said current through the spaced floor of a landing dock within said landing compartment.

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