Dec. 10, 1963 E. A. MORGAN ETAL 3,113,528

BOAT RIDE APPARATUS

Filed July 1, 1960 2 Sheets-Sheet 1

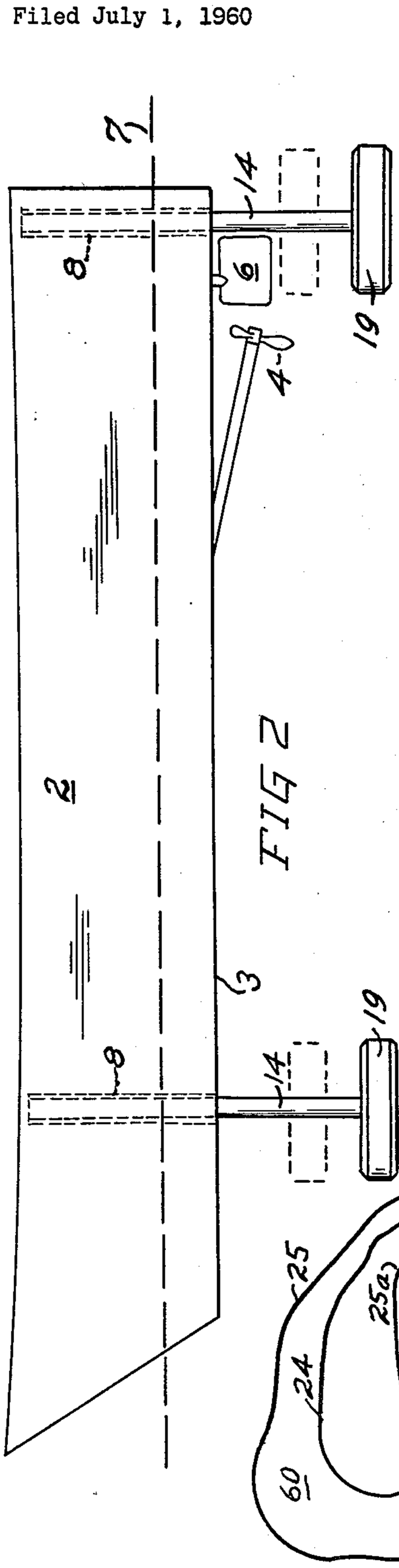

FIG 2

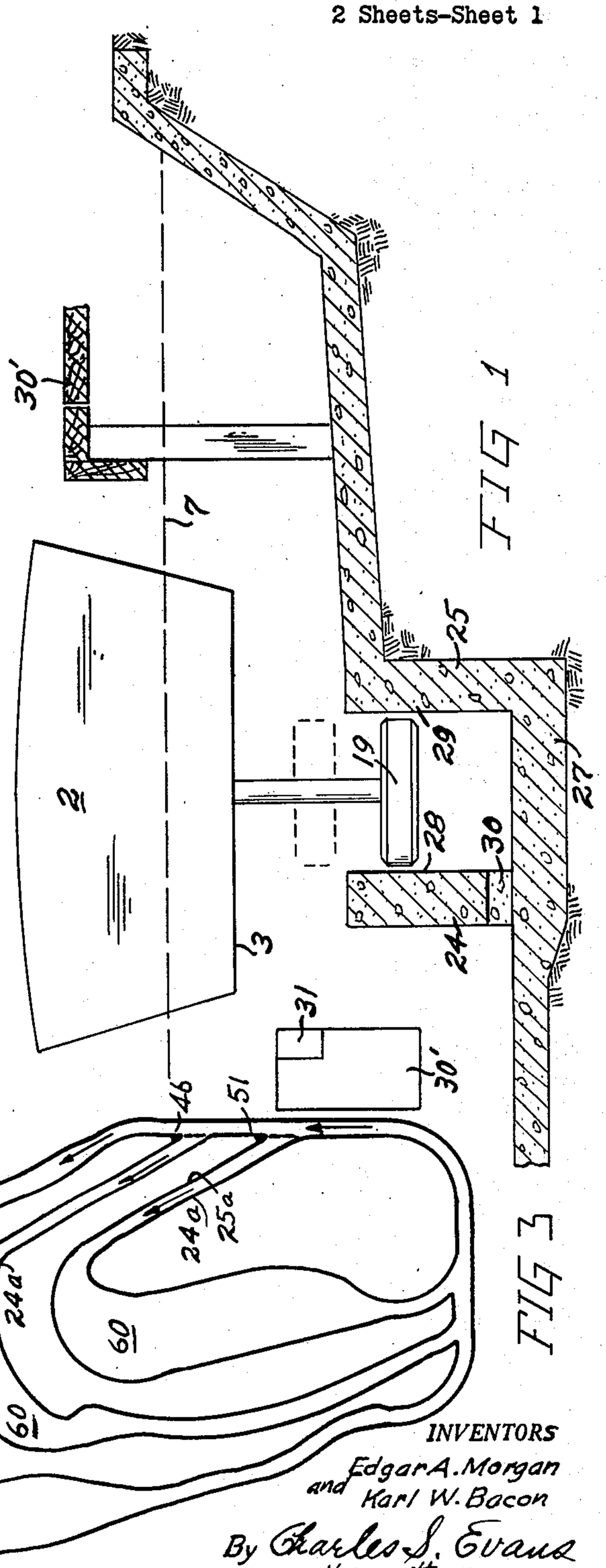

FIG 1

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BOAT RIDE APPARATUS

Filed July 1, 1960 2 Sheets-Sheet 2

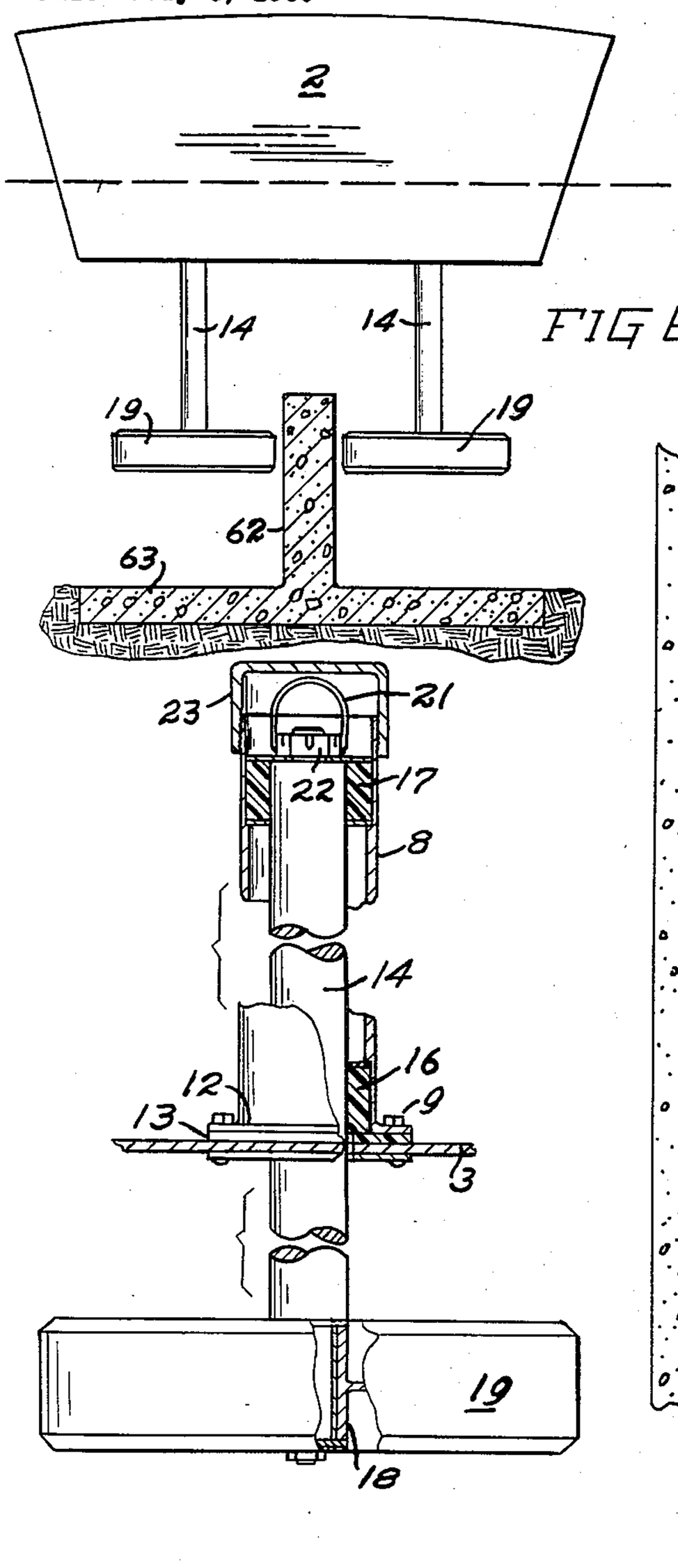

FIG 5

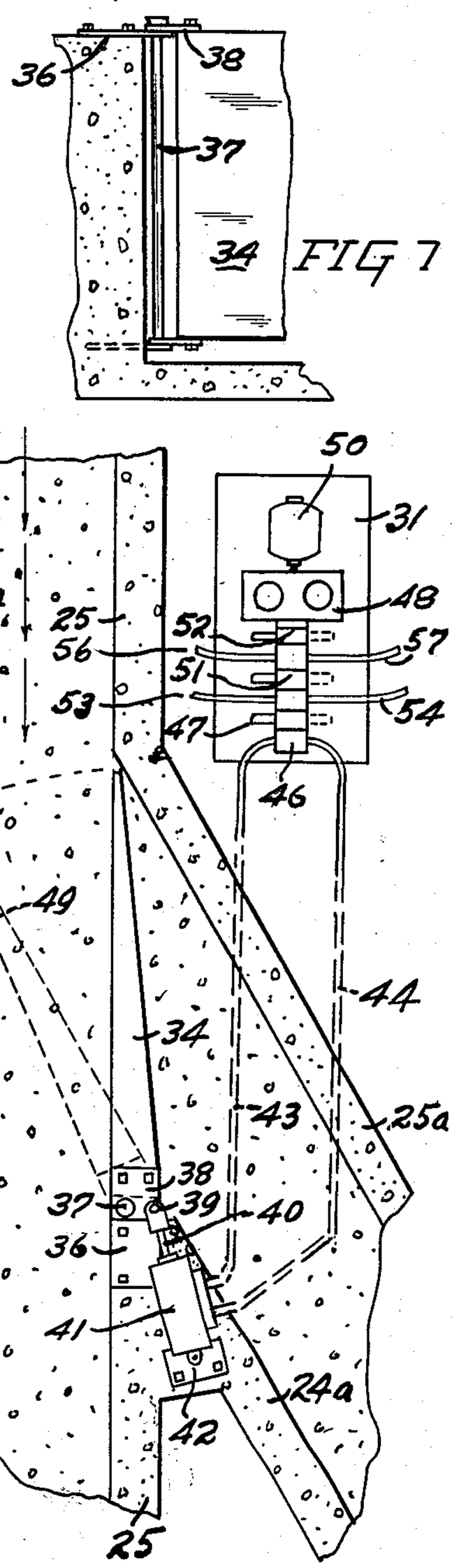

FIG 4

FIG 7

FIG 6

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3,113,528

Patented Dec. 10, 1963

3,113,528

BOAT RIDE APPARATUS

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Filed July 1, 1960, Ser. No. 40,308
7 Claims. (Cl. 104—73)

Our invention relates to amusement park apparatus and particularly to a passenger boat traveling a fixed or predetermined course in a lake or stream.

One of the objects of our invention is the provision of guide means, preferably submerged, and in fixed location, by which a predetermined and fixed path is provided for a boat to travel about the body of water in which the guide means is installed.

Another object of our invention is the provision of means including a guide wheel carried by the boat and cooperating with the submerged guide means to order or govern the course of travel of the boat within the limits set by the submerged guide means.

Another object of our invention is the provision of fixed guide and boat-mounted cooperating means free of complexities and complicated controls, wholly automatic in operation and beyond change or adjustment by the boat passengers.

Still another object of our invention is the provision of means by which a plurality of boat ride courses or paths may be arranged simultaneously on the same body of water with no interference.

Another object is the provision of switching means in the submerged guide means by which the boat may be directed from one guided or controlled course to another.

The invention possesses other objects, some of which with the foregoing will be brought out in the following description. We do not limit ourselves to the showing made by the description and drawing, since we may adopt variant forms of the invention within the scope of the appended claims.

Referring to the drawings:

FIG. 1 is an elevation partly in vertical section, and showing a boat, the fixed submerged guide means, and the cooperating boat-mounted guide wheel for controlling the course or path of travel of the boat.

FIG. 2 is an elevation showing the side view of the boat floating in its channel, and with a guide wheel adjacent each end.

FIG. 3 is a diagrammatic view in plan. It indicates a possible installation of my boat ride channels in a lake. The scale is 1 to 150 or more.

FIG. 4 is a plan view of a switch and switch controls.

FIG. 5 is an elevation partly in section and with portions omitted to reduce the length of the figure. It shows the mounting of the guide wheels and the means by which the wheels may be raised or lowered.

FIG. 6 is an elevation partly in vertical section, and showing a boat having a pair of spaced guide wheels adjacent each end and with a guide wall between them.

FIG. 7 is a fragmentary view in elevation showing the pivot rod mounting of the switch panel.

In terms of broad inclusion our invention comprises a guide wall provided with a substantially vertical face which constitutes a smooth race-way, and which customarily is arranged at a predetermined depth below the surface of a body of water within an amusement park. A passenger boat floating in the water above the guide wall is provided with a shaft adjacent each end, which extends downward from the boat bottom. Each shaft mounts a rotatable guide wheel, the tread of which is engageable with the race-way. When two guide walls in parallelism are used, the two wheels underlying the boat are confined

therebetween; and the course of travel of the boat is definitely fixed within narrow limits over at least part of the course when the guide walls are installed in the lake or stream bed. If desired, the spacing of the guide walls may be widened during part of the course to provide an extended area in which the boat may be steered temporarily independent of guide walls. It is to be understood that the guide walls are distinct from the means, either natural or man-made, which confine the lake or stream on which the boat floats.

The boat is usually provided with propulsion and steering means to facilitate general handling, although the rudder is ineffective when the course of travel of the boat is determined by the guide walls. In such a case, the engine drives the propeller, and the boat with its load of passengers, moves over its predetermined course from starting point to end, with no further attention.

A single guiding wall as shown in FIG. 6 may be used, with a two wheeled rig, for example, in a stream bed where rapids are arranged for an added thrill to the passengers, rocks otherwise dangerous, are flanked by a single guide wall; and since these may be located on both sides of the stream, collision of the boat with the rocks is prevented, while at the same time the boat may be rocked in a most realistic and satisfying manner.

Means in the guide walls are also provided for switching a boat from one guide channel to another, or to embarking and disembarking piers or storage areas.

In the drawings, FIGS. 1 to 4, we have shown our invention embodied in apparatus using two guide walls. In FIG. 6 we have shown another modification using a single guide wall between a pair of wheels at each end of the boat.

In greater detail our invented boat ride comprises a boat body or hull structure **2**, having a bottom **3** and equipped with a motor driven propeller **4** and rudder **6**, all of conventional type. In both FIGURES 1 and 2, the boat is shown floating in a lake or stream or other body of water, the water line of the loaded boat or level of the water being indicated by the broken line **7**.

Rigidly mounted in the bottom **3** of the boat is a stainless steel tube **8**, FIG. 5, sealed to the bottom by bolts **9** through the tube flange **12** and annular gasket **13**. In the boat illustrated in FIGS. 1 and 2, there are two tubes **8**, one adjacent each end. The tubes are about the same length, and extend upwardly from the boat bottom to somewhat less than the height of the sides, as shown.

Extending into each of the tubes **8** is a stainless steel shaft **14**, positioned therein by annular gasket sleeves **16** and **17** of deformable material such as soft rubber or neoprene. These sleeves act as shock absorbers when lateral stresses are applied to the shaft during the operation of the boat.

Journaled on the lower end of the shaft is a wheel **18**, equipped with preferably a low pressure tire **19**. A bail **21** is welded to a nut **22**, threaded on the upper end of the shaft, so that the shaft can be pulled up in the tube to raise the wheel to lie closer to the bottom of the boat as occasion may demand. A protective hood **23** is threaded on the upper end of the tube in normal use of the boat.

The purpose of the two wheels below the boat is to guide it along a predetermined course, fixed by a guiding wall. In FIG. 1 two concrete guiding walls **24** and **25** are shown, erected in a substantially vertical position on a base **27**. The essential shape of the rectangular twin wall concrete structure is that it shall provide a pair of oppositely disposed smooth raceways **28** and **29**, at their minimum, a few inches further apart than the outside diameter of the tire **19**, but which may spread apart widely as shown in FIG. 3, as the course dictated by the guide walls opens into the body of water in which our

ride is installed, so that the boat may be independently steered, of course within the wide limits fixed by the guide walls. Frequent openings **30** in the walls at their low points promote circulation within the channel and help in cleaning the bottom if necessary.

Ordinarily the closer spacing of the guide walls is used in the approaches to the platform **30'** of embarkation of the passengers. The same location may also serve to discharge the passengers.

In the event that our boat ride is to be installed in an artificial body of water, the concrete base **27** of the guide walls may extend over a part or over the whole bottom and on the land or beach side, extend to the shore line and provide foundation and support for the passenger loading and discharge facilities. Located at this point also is the control center **31** containing means for operating the switches which are desirable if more than a single course is to be operated. FIG. 3 suggests the use of three separate courses, requiring two switches.

FIG. 4 illustrates a typical installation of a switch panel **34** operated from the control center **31**. This view differentiates from FIG. 3, which is merely a diagrammatic plan view of a possible installation, in that the direction of travel in FIG. 4 is opposite to that indicated in FIG. 3, as shown by the arrows in each view. The guide walls **24***a* and **25***a* branch off from the wall **25** at an appropriate angle and at an interruption in the wall. At the intersection of walls **24***a* and **25**, a plate **36** suitably anchored in the concrete, together with a similar plate fixed in the concrete a short distance lower down, provide mounting for a vertical pivot rod **37** about which the switch panel **34** moves from one of its two positions to the other, to guide the boat through the channel between the walls **24** and **25**, or divert the boat into the channel between the walls **24***a* and **25***a*. The switch panel ends above the bottom of the channel but extends across the zone of contact with the guide wheels.

Means are provided for swinging the guide gate or switch panel from one position to the other. Fixed rigidly to the upper edge of the switch panel at its hinged end is a plate **38** the free end of which on one side is pierced by the pivot rod **37**, and at the opposite side is pivotally connected by the pin **39** to the piston rod **40**. This spacing between rod **37** and pin **39** provides a short lever arm utilized in moving the switch panel by its connection with the piston rod. The piston end of the rod **40** reciprocates in the cylinder **41**, pivotally mounted on the plate **42**, fixed rigidly at the juncture of walls **24***a* and **25**.

Opposite ends of the cylinder are connected by conduits **43** and **44** to the valve **46** operated by the handle **47**. With handle **47** in position shown, air under pressure from the tank-compressor combination **48** flows through the conduit **43** to the cylinder **41** to swing the switch panel into the position shown. Throwing the handle **47** over to the position indicated by the dotted lines opens the valve passage into the conduit **44**, putting pressure on the piston to throw the switch panel into the position shown in dotted lines **49**. In this position, a boat would be diverted from the course or channel between the guide walls **24** and **25** to the course or channel between the walls **24***a* and **25***a*.

The tank-compressor combination is driven by the electric motor **50** in a conventional arrangement with automatic controls to maintain constant tank pressure so that air under pressure from the tank is supplied to the cylinder and held therein to keep the switch panel in the position to which it is moved. Air under pressure is also available to the two valves **51** and **52**, which are connected respectively by conduits **53—54** and **56—57** to a switch operating unit, similar to that described, so that all switches are connected for operation to one control center.

A typical lay-out of three courses requiring but two

valves **46** and **51** is seen in FIGURE 3. The direction of travel of a boat in the diagrammatic arrangement illustrated in FIG. 3 will of course be in a direction opposite to that of a boat in the installation illustrated in FIG. 4. It is to be noted that in each course or channel, there may if desired, be a widened area **60** within the limits of which the boat may be steered by an occupant.

In FIG. 6 we show only a single guide wall **62**, rising vertically from the base slab **63**. In this case a pair of guide wheels each with tire **19** are disposed at each end of the boat, with the guide wall **62** between them. Both faces of the wall in the zone where the wheels can touch constitute raceways, and same as for the twin or double walls, the raceway is preferably as smooth surfaced as practicable to prevent unnecessary wear on the rubber or neoprene tread of the tire.

On occasions when it is necessary for the boats to be free of guide walls, the hood **23** is unscrewed from the tubes, and the bail **21** is engaged to lift the shaft **14** and its guide wheel above the level of the guide wall.

We claim:

1. In a boat ride apparatus for installation in a pool of water confined by suitable means, a pair of spaced guide walls distinct from said pool confining means and each having a substantially vertical face constituting a raceway arranged on the pool bottom, said guide walls being parallel at the beginning and ending of their course with the space between said guide walls widening over an intermediate portion of their course.

2. A boat ride apparatus as set forth in claim 1, in which the widening of the space between the guide walls is irregular.

3. A boat ride apparatus for installation in a body of water, comprising a guide wall having a portion thereof constituting a raceway and arranged at a predetermined depth below the surface of the water, a boat buoyantly supported on the surface of the water, a housing fixed on the boat structure, a shaft extending downwardly from the housing and vertically movable therein, and a rotatable guide wheel carried on the shaft and having a tread engageable with the raceway.

4. A boat ride in accordance with claim 3 in which the shaft is provided with means for absorbing laterally directed shocks, and the wheel is equipped with a low pressure pneumatic tire.

5. A boat ride apparatus for installation in a body of water, comprising a pair of substantially parallel guide walls each having a face constituting a smooth raceway and arranged at a predetermined depth below the water surface, a boat buoyantly supported on the surface of the water, a tubular housing fixed in the boat structure, a vertically adjustable shaft arranged in the housing, and a rotatable guide wheel carried on the shaft and having a tread engageable with the raceway.

6. A boat ride in accordance with claim 5 in which deformable annular gaskets are interposed between the tubular housing and the shaft.

7. A boat ride in accordance with claim 5 in which the boat is provided with means for propelling it through the water.

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