

(No Model.)

3 Sheets—Sheet 1.

H. C. JOHNSON.  
MARINE VELOCIPEDÉ.

No. 599,237.

Patented Feb. 15, 1898.

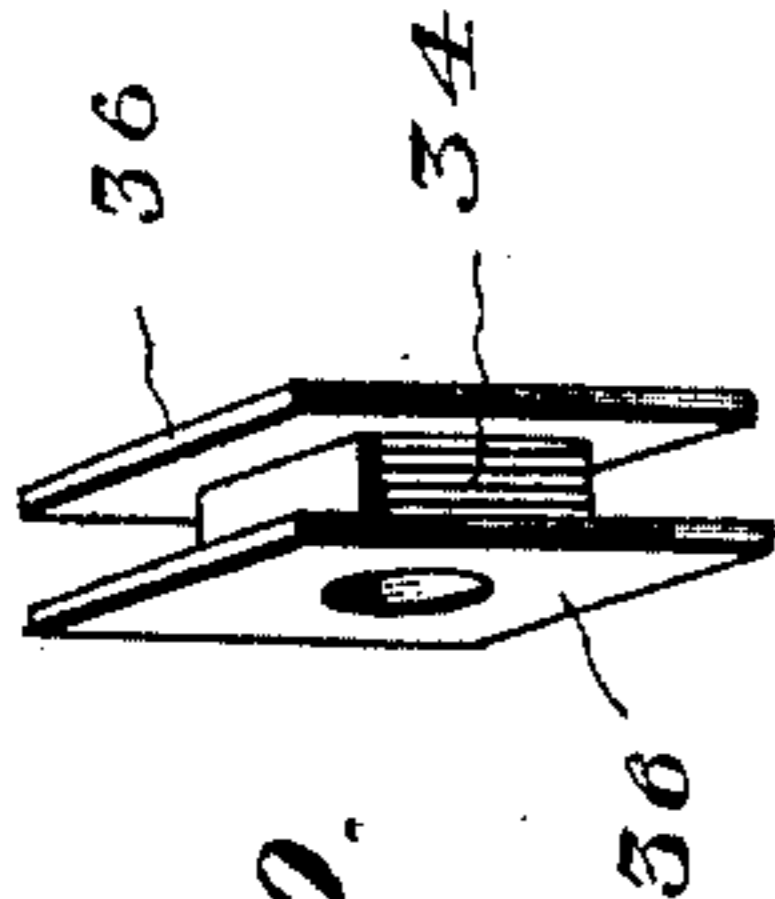
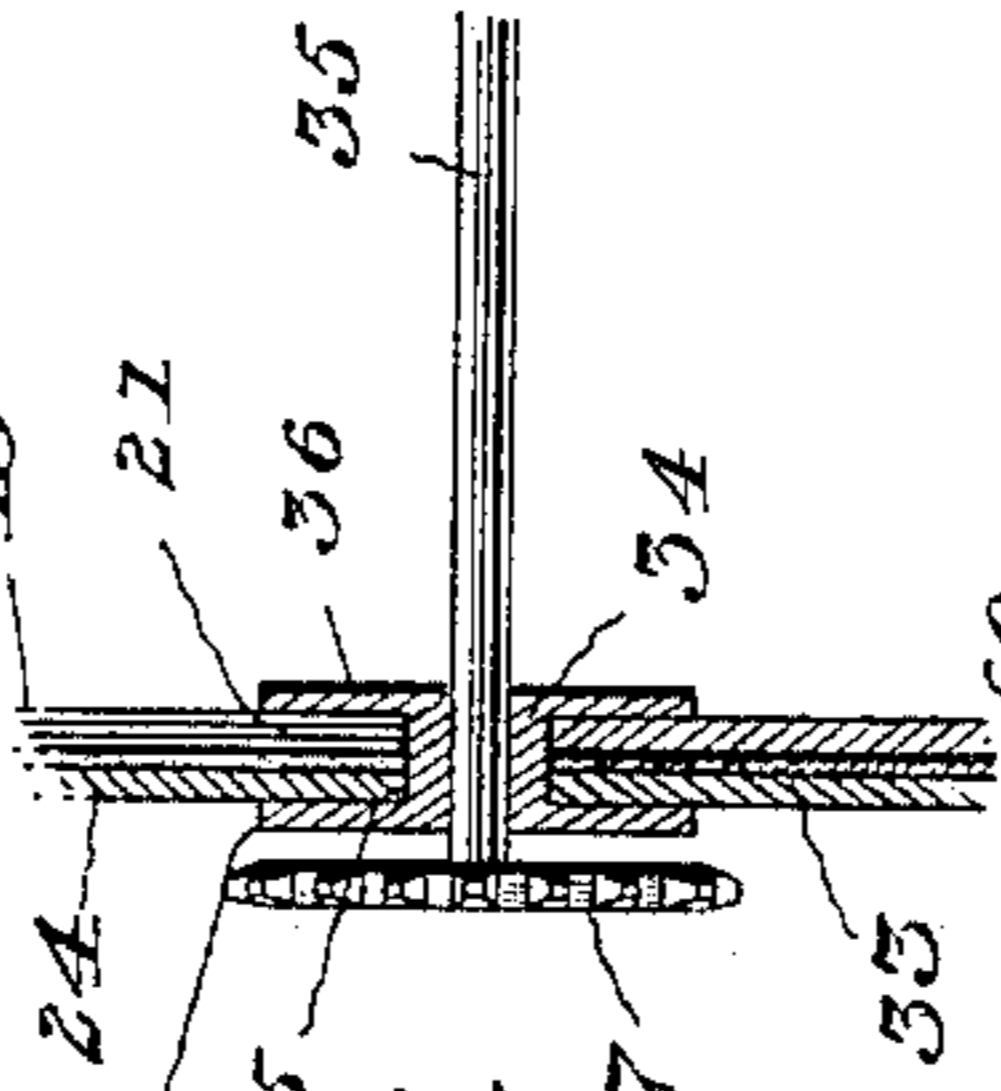


Fig. 7.



679.

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Hilary C. Johnson

Witnesses

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Edwin Cruise

By *his* Attorneys,

CA Snow & Co

(No Model.)

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Fig. 2.

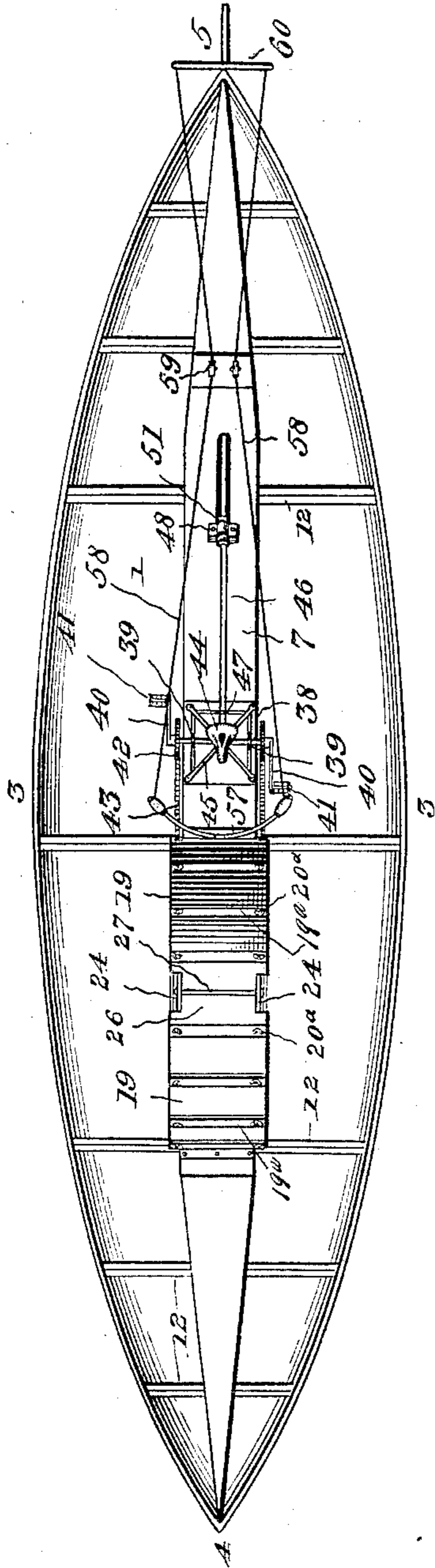
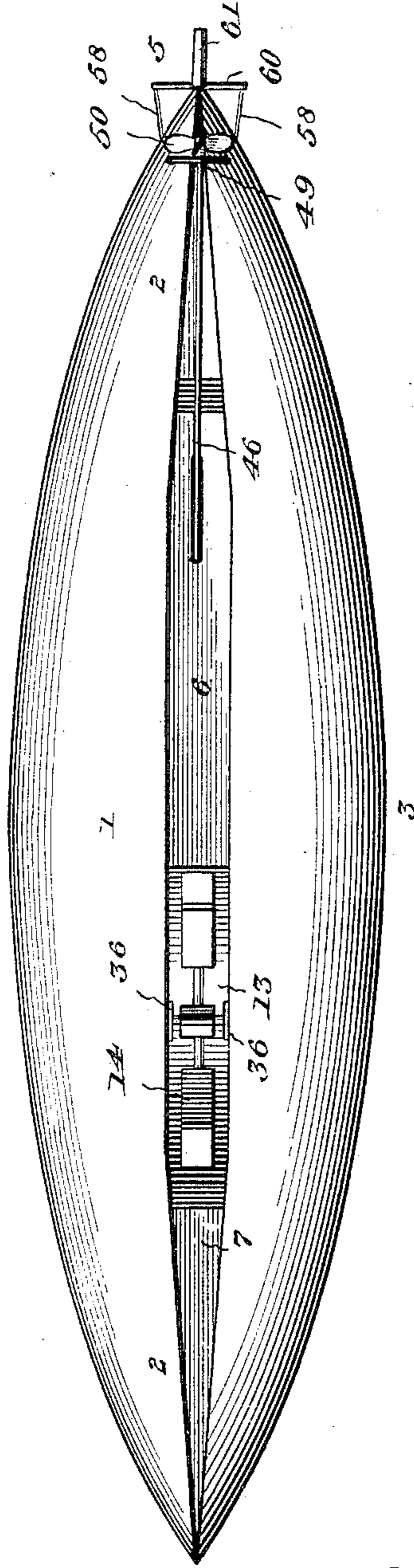


Fig. 3.



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(No Model.)

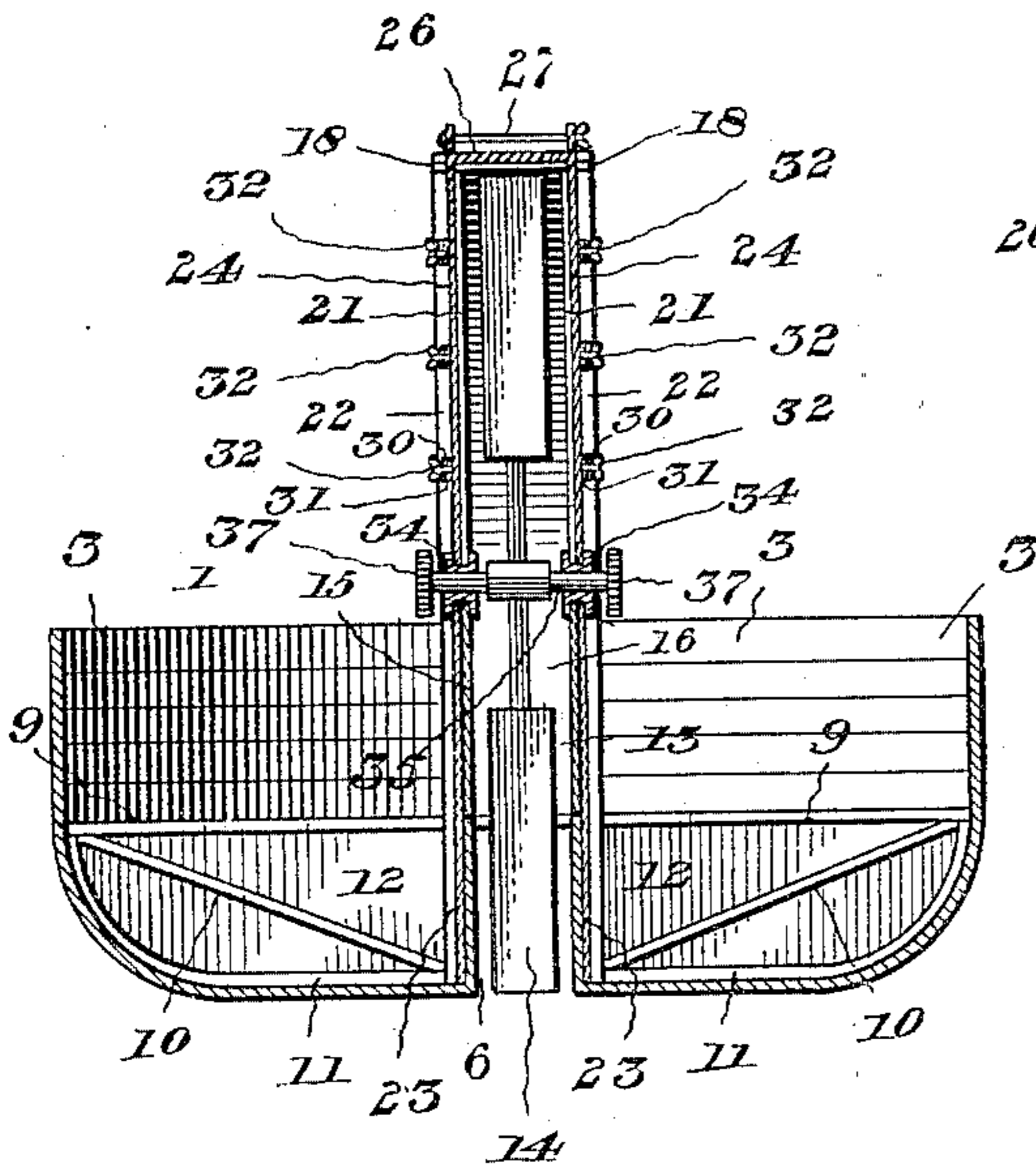
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H. C. JOHNSON.  
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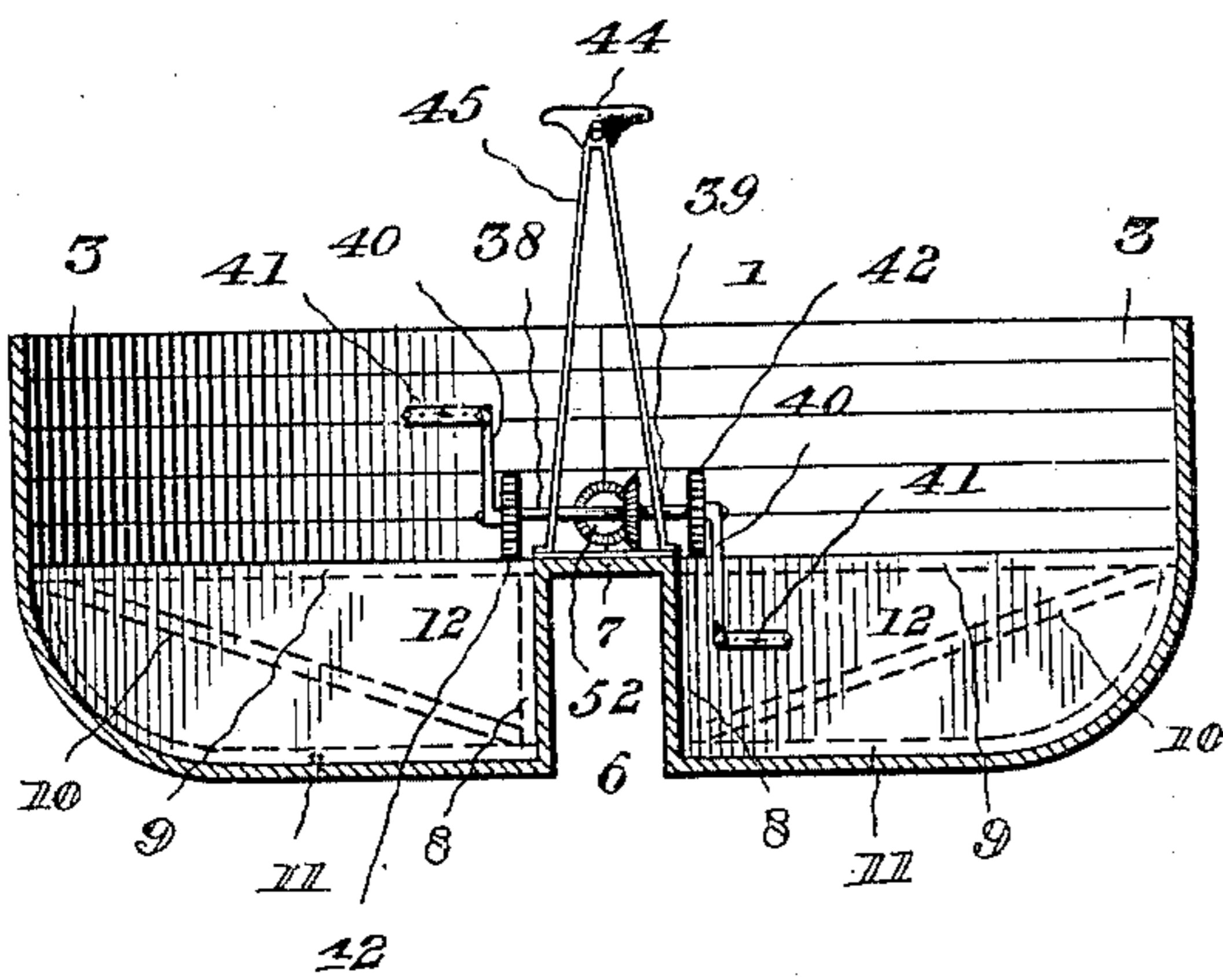
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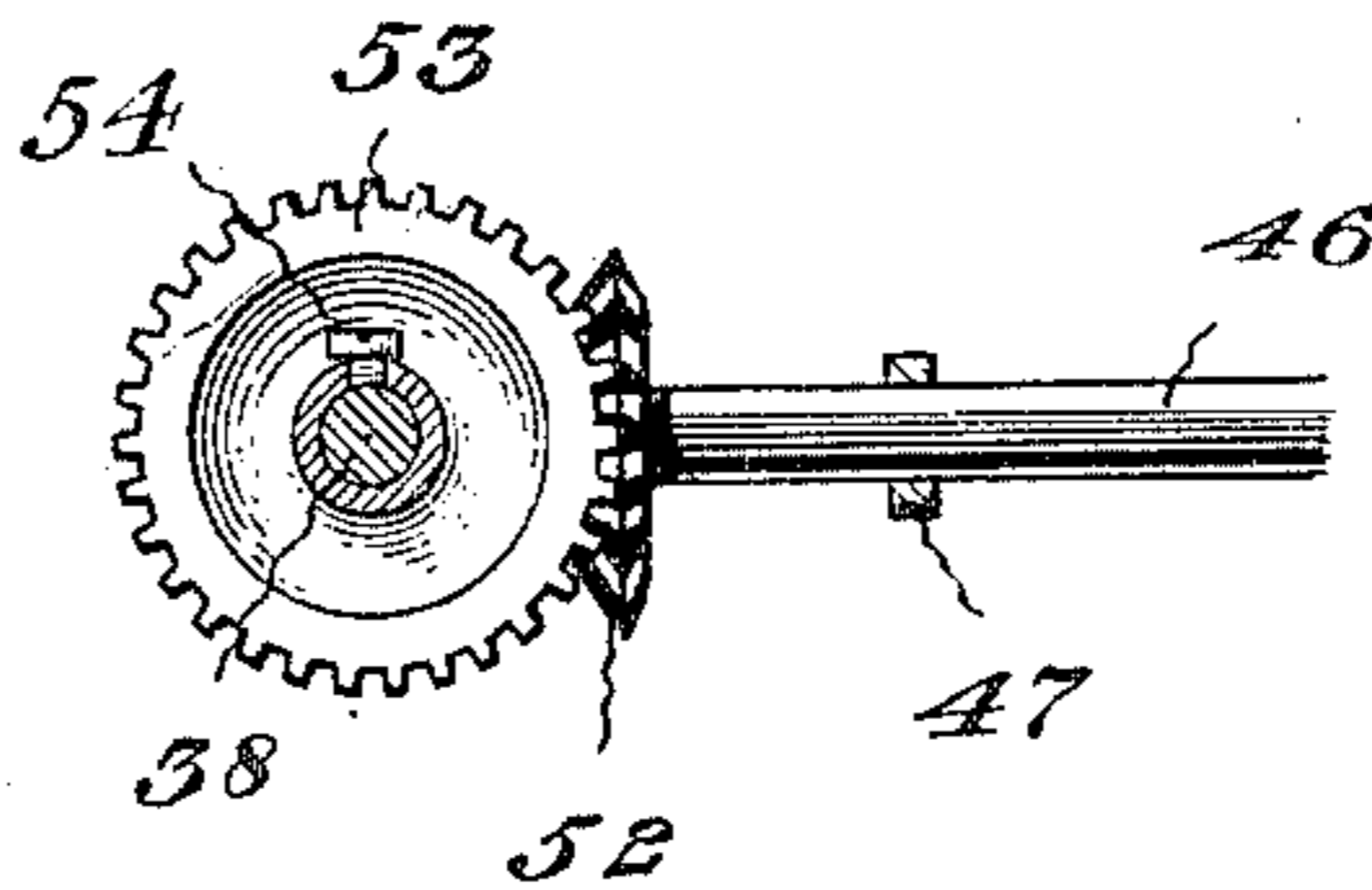
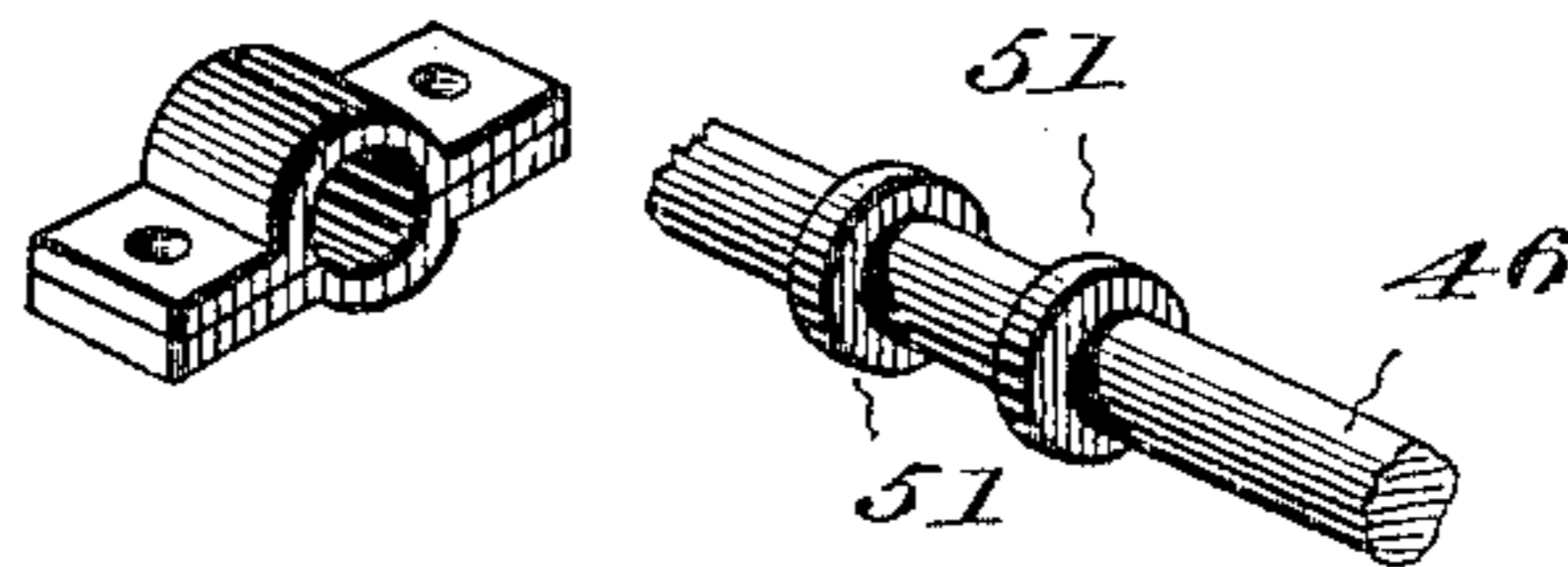
*Fig. 4.*



*Fig. 5.*



*Fig. 8.*



*Fig. 9.*

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# UNITED STATES PATENT OFFICE.

HILARY C. JOHNSON, OF MEDIA, PENNSYLVANIA.

## MARINE VELOCIPED.

SPECIFICATION forming part of Letters Patent No. 599,237, dated February 15, 1898.

Application filed June 28, 1897. Serial No. 642,636. (No model.)

*To all whom it may concern:*

Be it known that I, HILARY C. JOHNSON, a citizen of the United States, residing at Media, in the county of Delaware and State of Pennsylvania, have invented a new and useful Marine Velocipede, of which the following is a specification.

This invention relates to marine velocipedes; and its object is to improve the construction of devices of this character, whereby they may be more easily propelled and maneuvered and whereby the paddle-wheel can be easily removed from its bearings for the purposes of repair or otherwise.

With these objects in view the invention consists of the several details of construction and combination of parts, as will be hereinafter fully described, and particularly pointed out in the claims.

In the drawings, Figure 1 is a side elevation of a marine velocipede made in accordance with my invention. Fig. 2 is a top plan view. Fig. 3 is a bottom plan view. Fig. 4 is a vertical transverse section on the line  $x$  of Fig. 1. Fig. 5 is a similar section on the line  $y$  of Fig. 1. Fig. 6 is a vertical longitudinal section. Fig. 7 is a view in perspective of portions of the wheel-casing separated. Fig. 8 is a detail perspective view of the middle portion of the propeller-shaft and its bearing. Fig. 9 is a detail view of the gearing to connect the crank and propeller-shaft. Fig. 10 is a perspective view of one of the bearings for the paddle-wheel shaft. Fig. 11 is a detail sectional view of a portion of the wheel-casing and the bearing for the paddle-wheel shaft.

Similar reference-numerals indicate similar parts in the several figures.

1 indicates the hull of the boat, the bottom of which is inclined upwardly at each end, as indicated at 2, and the opposite sides 3 of which converge at their ends to the stem and stern posts 4 and 5, so that each end of the boat is tapering.

6 indicates a water-passage which extends longitudinally of the bottom of the hull, and the upper wall 7 of which is in substantially the same horizontal plane as the lower ends of the stem and stern posts.

The framework of the boat consists of two spaced rows of vertical posts 8, a series of

horizontal cross-braces 9, connected to the upper ends of the posts 8, a series of diagonal braces 10, which extend from the ends of the horizontal braces to the lower ends of the vertical posts, and a series of ribs 11. The water-passage will be formed by securing the planks which form the vertical sides of the passage to the opposing sides of the vertical posts 8, and the planks which will form the top walls 7 of the water-passage will be secured to the under side of the cross-braces 9, between the vertical posts 8, thereby forming a smooth surface, with which the water will be in contact, and so offering but little frictional resistance to the forward movement of the boat. A series of bulkheads 12 are formed at each side of the water-passage, the vertical posts 8, braces 9 and 10, and the ribs 11 serving as frameworks for the bulkheads. The planking of the hull will be secured to the edges of the bulkheads and the ribs 11 in the usual manner, and the bulkheads will give strength and stiffness to the hull.

The top wall 7 of the waterway is provided with an opening 13 intermediate the ends of the boat, through which the paddle-wheel 14 extends into the water-passage. The portion of the paddle-wheel which is above the top of the water-passage will be inclosed by a sheet-metal casing, of which 15 indicates the sides and 16 the ends, which are secured to the sides in any suitable manner. The lower ends of the sides and ends will be secured to the top wall 7 of the water-passage in any suitable manner. The upper edges 17 of the sides are curved in the arc of a circle and are provided with laterally-extending flanges 18, and the upper ends of the end pieces 16 are also provided with laterally-extending flanges 18.

19 indicates the cap-sections, which are secured to the flanges 18 by means of cross-bars 19<sup>a</sup>, bolts 20, and thumb-nuts 20<sup>a</sup>. Each side is provided with a vertical slot 21, which extends from its upper edge downwardly, and on each side of these slots stiffening-bars 22 are secured to the sides by riveting or otherwise, and the lower ends of these bars will be firmly secured to the planks, which will be secured to the outer sides of the vertical posts 8.

23 indicates reinforcing-plates which are riveted or otherwise firmly secured to the sides

15, between the stiffening-bars 22, and extend from the lower end of the slots 21 to the lower ends of the stiffening-bars.

24 indicates sliding plates, each of which is provided at its lower end with a rectangular recess 25. These sliding plates are connected at their upper ends by a cap-plate 26 and by a bolt 27, which extends across above the cap-plate. These plates are adapted to slide over the sides 15, between the stiffening-bars 22, and to engage with their lower ends the upper ends of the reinforcing-plates 23. When the parts are in position, the ends of the cap-sections 19 will preferably overlap the ends of the cap-plate 26, and the overlapping ends will be secured to the flanges 18 by the same bolts. A suitable packing 28 will be inserted between the flanges 18 and the edges of the plates in order to make a water-tight joint.

The flanges 18 are cut away between the bars 22 in order to permit the sliding plates 24 to lie close to the sides of the casing. The stiffening-bars 22 are made of angle-iron, and the projecting members of these bars are provided with a series of alining openings 29 for the reception of a series of sliding bars 30. Each of the sliding plates is provided with a series of stiffening-ribs 31, which are so arranged that when the sliding plates are in position the ribs will be immediately opposite the sliding bars 30. Each of the sliding bars is provided with a threaded opening, through which a set-screw 32 passes to engage the ribs 31, and when these set-screws are tightened up the sliding plates will be forced into close engagement with the sides of the casing. Suitable packing 33 will be inserted between the sliding plates 24 and the sides of the casing on each side of the slots 21 in order to make a water-tight joint.

34 indicates boxes which are rectangular on their exterior surface and are bored out to receive the shaft 35 of the paddle-wheel 14. These rectangular boxes are adapted to fit in the slots 21 and be supported on the upper edge of the reinforcing-plate 23 and the bottom wall of the slot 21, and each box is provided with flanges 36, adapted to fit closely against the interior and exterior faces of the respective sides of the casing. The shaft 35 projects at each end beyond the casing and is provided with sprocket-wheels 37. When it is desired to remove the wheel for any purpose, the thumb-nuts 20<sup>a</sup> will be removed from the bolts 30 and the cap-plates 19 removed. The set-screws 32 will also be loosened, and the sliding plates 24 and the cap-plate 26 can then be removed, when the wheel and its journal-boxes can be lifted out through the opening in the top of the casing, and in order to replace it the operation just described will be performed in reverse order.

Under normal conditions the boat will not be submerged above the top of the water-passage; but in the event of some accident occurring that would cause the water to fill the

interior of the hull as soon as the water closes the opening in the journal-boxes of the paddle-wheel shaft the casing inclosing the paddle-wheel will become an air-tight chamber and by its buoyancy serve to prevent the boat from entirely sinking.

38 indicates a crank-shaft which is supported in suitable bearings 39, supported on the top wall of the water-passage, and this shaft is provided with a crank 40 at each end, and each crank carries a pedal 41.

42 indicates sprocket-wheels rigidly secured on the crank-shaft 38 in alinement with the sprocket-wheels 37 on the paddle-wheel shaft 35, and chains 43 connect the sprocket-wheels 42 and 37.

44 indicates a seat supported on a suitable frame 45, which extends upwardly from the top wall of the water-passage. The pedal-cranks are so arranged that in operating them the rider's feet will work below the top of the water-passage, on each side thereof.

46 indicates a propeller-shaft which inclines downwardly from its front to its rear end. The front end of the propeller-shaft is supported in a bearing 47, which is secured on the seat-frame 45, and its middle portion is supported in a suitable bearing 48, secured in the top wall of the water-passage, and at this point the shaft passes through the top wall into the water-passage and extends to the rear end of the boat, where it is supported in suitable brackets 49, secured to the stern of the boat and provided with a suitable propeller 50. The shaft is provided with suitable collars 51 on each side of the bearing 48 in order to prevent the shaft from moving endwise and to give the necessary thrust bearing to propel the boat in either direction. The shaft is provided near its front end with a beveled pinion 52, adapted to mesh with a beveled gear 53, carried by the crank-shaft 38. This beveled gear 53 is adjustable on the crank-shaft in order that it may be moved into or out of engagement with the pinion 52 on the propeller-shaft, and it is held in its adjusted position by means of a set-screw 54, which passes through its hub to engage the crank-shaft 38.

55 indicates a vertical shaft which is supported in suitable bearings 56, secured to the rear end of the paddle-wheel casing, and this shaft carries at its upper end a handle-bar 57, from the ends of which ropes, chains, or wires 58 lead under pulleys 59, which are secured to a fixed part of the boat, to a cross-bar 60 on the upper end of the rudder-post 61. The handle-bar 57 is so located that the operator when in the seat 44 can conveniently grasp it and steer the boat as desired.

Two or more air-tight chambers 62 are arranged above the water-passage and communicate at their lower ends therewith. These air-chambers serve to give buoyancy to the boat, and in the case of accident will aid the paddle-wheel casing in preventing the boat from entirely sinking.

From the above description it will be seen that I have produced a marine velocipede which can be propelled either by the paddle-wheel or the propeller alone, or by both together. By having the ends of the bottom to incline upwardly and outwardly the boat can be maneuvered much easier, as it will practically turn on a pivot, for, as before stated, under normal conditions the stem and stern of the boat will not be in the water. The inclination to the ends of the bottom will also facilitate running the boat up on a bank to effect a landing, and will also make it easier for the boat to be backed off from the bank. It is also obvious that by constructing the paddle-wheel casing in the manner described the paddle-wheel may be easily and quickly removed for the purpose of repair or otherwise and be as easily replaced in position.

While I have illustrated and described my invention as being propelled by manual power, it is of course obvious that the crank-shaft could be suitably connected to any kind of motor in order to give it the necessary rotary movement.

It will be understood that changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having described the invention, what I claim is—

1. In a marine velocipede, a hull tapering longitudinally to each end and having a bottom inclining upwardly and outwardly at each end and provided with a water-passage extending longitudinally thereof from end to end, the upper wall of said passage being in substantially the same horizontal plane as the lower ends of the stem and stern posts, combined with a paddle-wheel mounted to revolve in said water-passage intermediate the ends of the boat, suitable means to revolve the paddle-wheel, and a steering mechanism, substantially as described.

2. In a marine velocipede, a hull having a water-passage in its bottom extending from end to end thereof, the top wall of said passage being provided with an opening intermediate its ends, combined with a paddle-wheel casing fitted over said opening and firmly secured at its lower end, the top of said casing being removable and its sides provided with slots open at their upper ends, and a paddle-wheel having its shaft journaled in boxes removably supported in said slots, substantially as described.

3. In a marine velocipede, a paddle-wheel

casing secured at its lower end to the hull and adapted to inclose the upper portion of the paddle-wheel, the cap of said casing being in sections removably bolted to the sides and ends of the casing, and the sides having vertical slots open at their upper ends to receive the journal-boxes of the paddle-wheel shaft, sliding plates to close said slots, and means to clamp the sliding plates to the casing, substantially as described.

4. In a marine velocipede, a paddle-wheel casing secured at its lower end to the hull and adapted to inclose the upper portion of the paddle-wheel, the cap of said casing being in sections removably bolted to the sides and ends of the casing, and the sides having vertical slots open at their upper ends to receive the journal-boxes of the paddle-wheel shaft, sliding plates to close said slots, means to clamp the sliding plates to the casing, a packing interposed between the cap-sections and the sides and ends of the casing, and between the sliding plates and the sides of the casing to make water-tight joints, substantially as and for the purpose described.

5. In a marine velocipede, the combination of a paddle-wheel, a casing firmly secured at its lower end to the hull of the boat to inclose the upper portion of the paddle-wheel, the upper ends of the side and end pieces of said casing being provided with lateral flanges, and said sides having vertical slots open at their upper ends, cap-sections removably bolted to the said flanges, stiffening-bars secured to the casing on each side of said slots, reinforcing-plates secured to the sides between the bearings below the slots, rectangular boxes fitted in said slots and supported on the lower walls of the slots and the upper ends of the reinforcing-plates, said boxes serving as bearings for the paddle-wheel shaft, sliding plates fitting between the bars and having recesses at their lower ends to receive the said boxes, a cap-plate connecting the upper ends of the sliding plates and adapted to be removably secured to said flanges, sliding bars supported in the stiffening-bars, and set-screws working through the sliding bars and engaging the sliding plates, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

HILARY C. JOHNSON.

Witnesses:

H. P. TUEN,  
R. H. THOMSON.