Nov. 13, 1923. 1,473,832

J. D. PARK, JR

BOAT PROPELLER

Filed Aug. 4, 1922 4 Sheets-Sheet 1

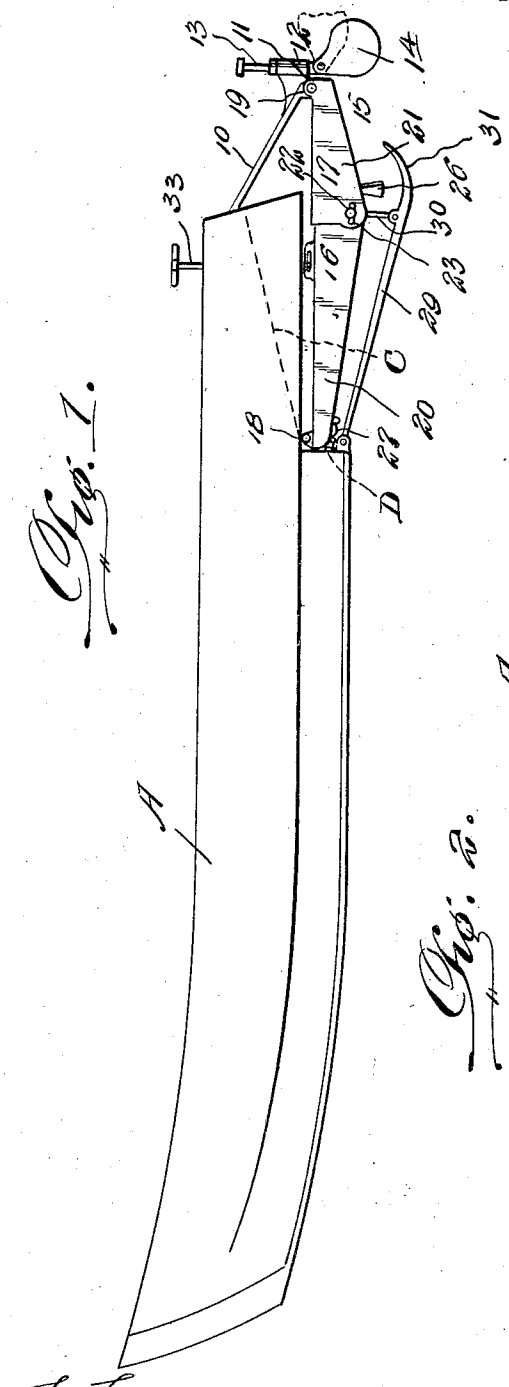



Fig. 1.

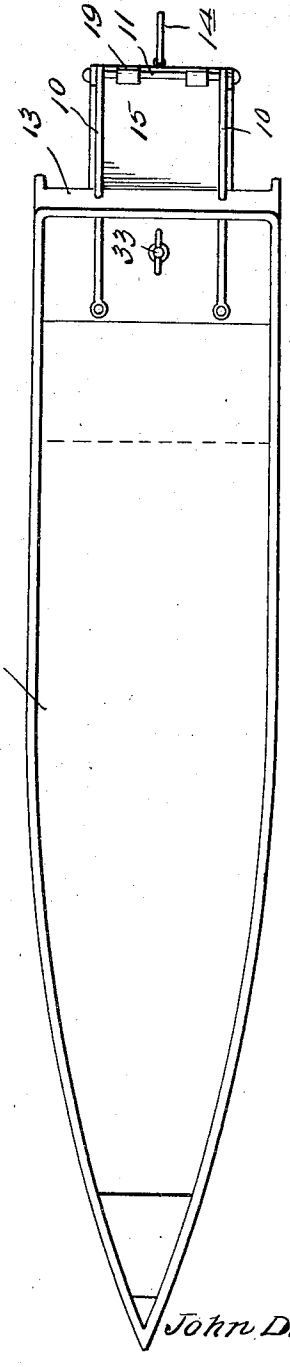



Fig. 2.

John D. Park Jr.
INVENTOR

BY Victor J. Evans.
ATTORNEY

H. Fox.

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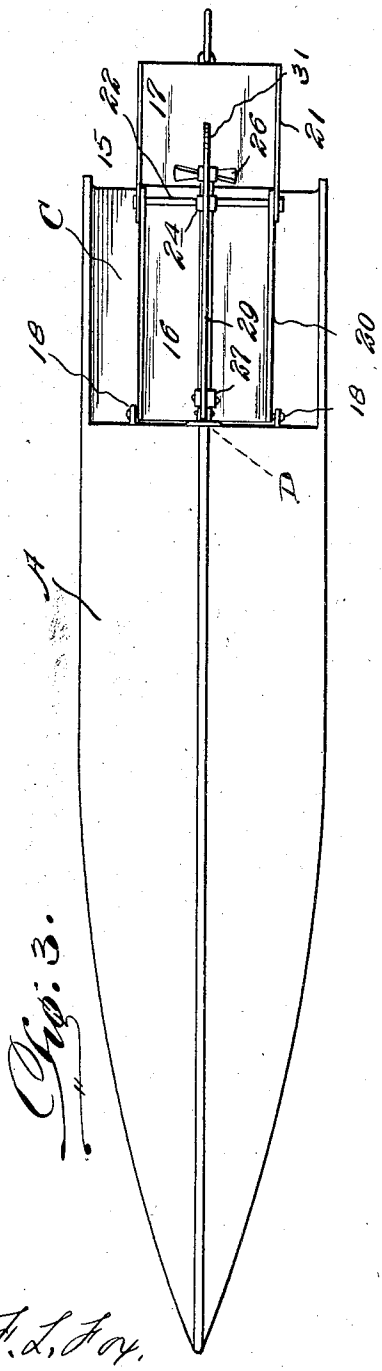



Fig. 3.

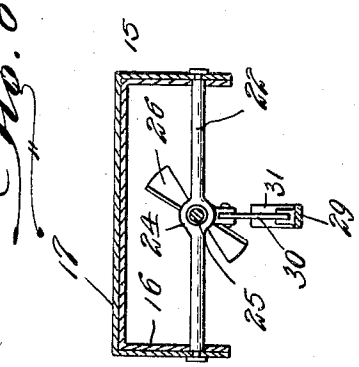



Fig. 6.

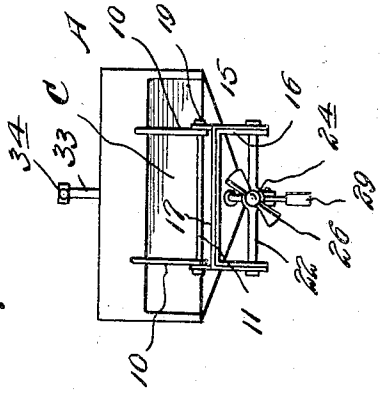



Fig. 4.

F. L. Foy.

WITNESS:

John D. Park, Jr.

INVENTOR

BY Victor J. Evans.

ATTORNEY

Nov. 13, 1923. 1,473,832

J. D. PARK, JR

BOAT PROPELLER

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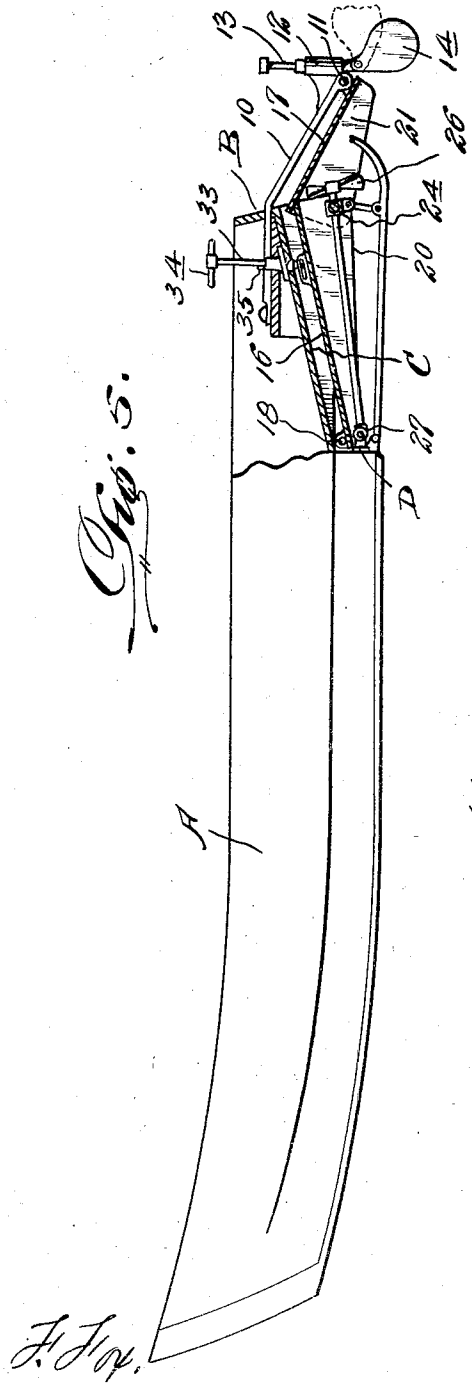



Fig. 5.

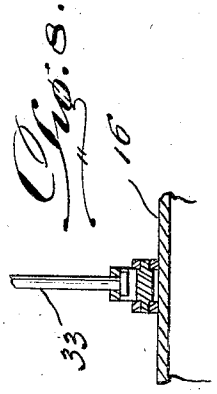



Fig. 8.

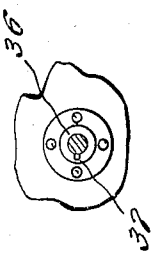



Fig. 9.

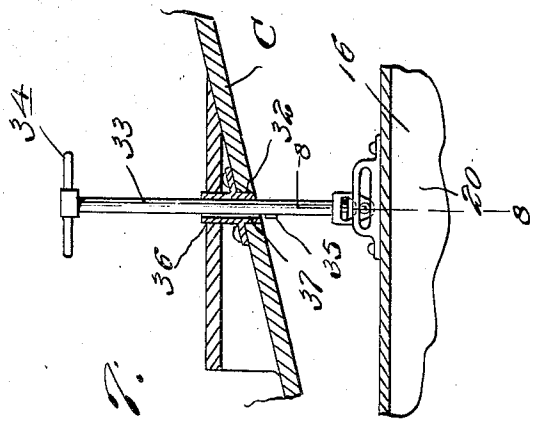



Fig. 7.

John D. Park Jr.
INVENTOR

BY Victor J. Evans
ATTORNEY

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BOAT PROPELLER

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Fig. 10.

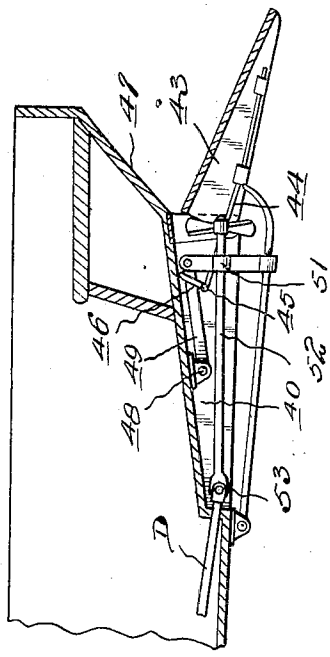



Fig. 11.

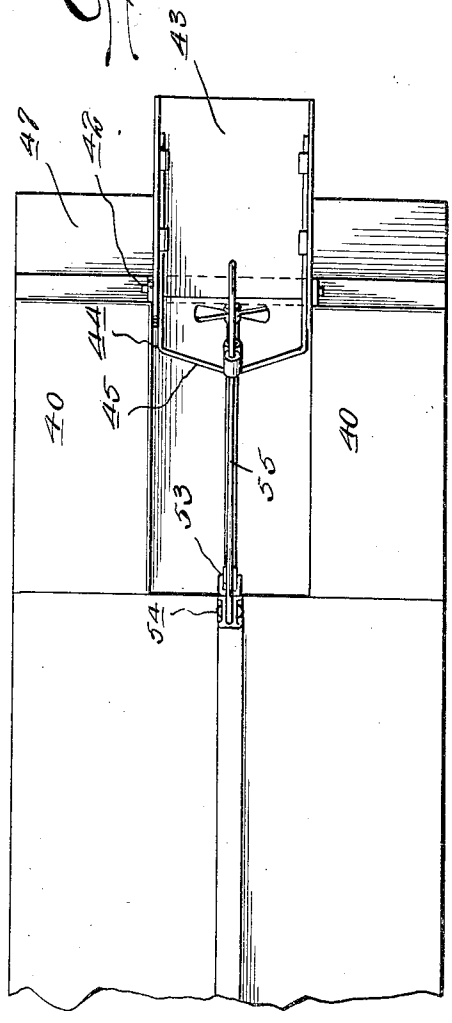
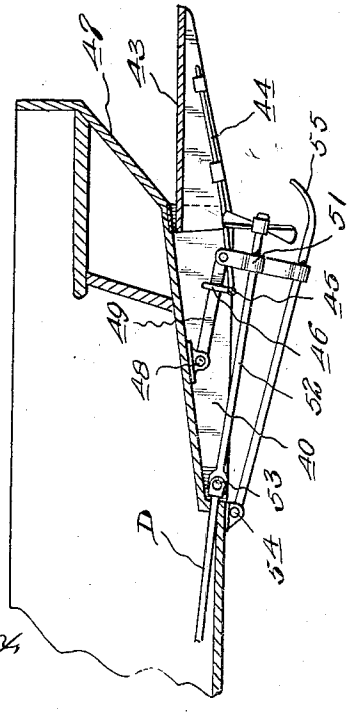



Fig. 12.




WITNESSES:

John D. Park Jr.

INVENTOR

BY Victor J. Evans.

ATTORNEY

Patented Nov. 13, 1923. 1,473,832

# UNITED STATES PATENT OFFICE.

JOHN D. PARK, JR., OF CINCINNATI, OHIO.

## BOAT PROPELLER.

Application filed August 4, 1922. Serial No. 579,732.

*To all whom it may concern:*

Be it known that I, JOHN D. PARK, Jr., a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented new and useful Improvements in Boat Propellers, of which the following is a specification.

This invention relates to water craft particularly to small boats of the power type, and has for its object the provision of a novel propeller mounting whereby the propeller will be automatically moved up toward the bottom of the boat in case of shoal water of such shallowness that the ordinary propeller might strike against the bottom and be damaged.

An important object is the provision of a propeller mechanism including a tunnel hingedly mounted upon the bottom of the boat and enclosing the propeller, the tunnel carrying a shoe which is engageable with the bottom in case the water is very shallow and which will operate to swing the tunnel upwardly so that the propeller cannot possibly touch the bottom.

Another object is the provision of a device of this character which is provided with means whereby the tunnel member may be located in either selected position depending upon whether the boat is to used in deep or shallow water.

Still another object is the provision of a novel mounting for the tunnel member which will permit it to have the maximum efficiency.

An additional object is the provision of a device of this character which will be simple and inexpensive in manufacture, efficient and durable in service, positive in action and a general improvement in the art.

With the above and other objects and advantages in view the invention consists in the details of construction to be hereinafter more fully described and claimed and illustrated in the accompanying drawings in which:

Figure 1 is a side elevation of a boat equipped with my propeller structure, the parts being in normal position,

Figure 2 is a top plan view,

Figure 3 is a bottom plan view,

Figure 4 is a rear elevation,

Figure 5 is a longitudinal section showing the tunnel member in its uppermost position,

Figure 6 is a cross sectional view taken through the propeller support,

Figure 7 is a detail sectional view showing the locking mechanism,

Figure 8 is a detail section on the line 8—8 of Figure 7,

Figure 9 is a cross section through the locking rod showing a plan of the retaining member,

Figure 10 is a vertical section through a modified form of the invention, the tunnel being in lowered position,

Figure 11 is a bottom plan view,

Figure 12 is a vertical section showing the tunnel raised.

Referring more particularly to the drawings and especially to Figures 1 to 9, the letter A designates the hull of a boat which is here shown as having a square stern B and which has the rear end of its bottom inclined upwardly as indicated at C. The letter D designates the propeller shaft which is driven by any ordinary or preferred engine, the latter forming no part of the present invention.

In carrying out my invention I provide a pair of supporting arms 10 which are suitably secured to the hull A and which extend beyond the stern in a downwardly inclined direction and which have their rear extremities connected by a cross bar 11 which is provided with a bearing 12 for the rudder post 13 carrying the usual rudder 14 and provided with any suitable control means. I further employ a tunnel structure designated broadly by the numeral 15 and including two trough like sections 16 and 17. The forward section 16 has its forward end hinged, at 18, to the bottom of the hull at the forward end of the inclined portion C, while the section 17 has its rear end hinged, as shown at 19, to the rear ends of the arms 10. The sides 20 of the forward tunnel section 16 are triangular in shape with the wider ends at the rear and

the sides 21 of the section 17 are likewise triangular in shape with the wider ends overlapping the wider ends of the sides 20 of the front section, the overlapping sides 21 and 20 being pivotally connected by a cross member 22 which passes through holes in the sides 21 and through slots 23 in the sides 20 so that pivotal movement of the two sections with respect to each other is permitted.

The cross member 22 carries a bearing 24 through which is journaled a shaft 25 carrying the propeller 26 and connected with the shaft D by a universal joint 27. Pivoted upon the hull, as shown at 28, at the forward end of the inclined portion C is a rearwardly extending rod 29 which is connected near its rear end with the cross member 22 by means of a support 30 and which has its extremity formed as a shoe 31 designed to engage upon the bottom of shoal water for moving the tunnel structure upwardly.

Extending through a suitable packing member 32 in the hull is a shaft 33 which is connected with the forward tunnel member 16 and which carries a handle 34. This shaft also carries a projection 35 engageable against either the top or the bottom of a sleeve 36 which is formed with a key way 37 through which the lug or projection 35 may pass when the shaft 33 is turned to a certain position. The lower end of this shaft must naturally have a swivel connection as well as a sliding connection with the tunnel structure.

In the operation it will be seen that ordinarily the tunnel members or sections 16 and 17 are in their lowermost positions as shown in Figure 1, whereupon the propeller shaft 25 will extend downwardly in an inclined direction. The boat is of course propelled in the usual manner. The tunnel member may be held in such downwardly extending position by turning the handle 34 sufficiently that the projection 35 will register with the key way 37 and then pressing the shaft 33 downwardly until the projection 35 clears the sleeve 36 and subsequently turning the handle so that the projection 35 will engage beneath the lower end of the sleeve. It is then impossible for the tunnel members to be moved upwardly.

In the event that the boat runs into shoal water, and assuming that the device is not locked as just described, the engagement of the shoe 31 with the bottom will cause the tunnel sections 16 and 17 to swing upwardly into the position shown in Figure 5, the section 16 lying flat against the inclined portion C of the hull. After the craft passes over the shoal and again enters deep water the tunnel members are gravitationally returned to normal position. If desired the tunnel members may be locked in their uppermost positions by pulling the shaft 33 up and then turning it so that the projection 35 will bear upon the upper end of the sleeve.

In Figures 10 to 12 I have shown a modified form of the invention in which there is provided only one tunnel member. In these figures I have shown the stern portion of the boat as having its underside carrying spaced air tight tanks 40 which are rectangular in plan and wedge shaped in longitudinal section, that is tapered to nothing at their forward ends. The inner sides of these tanks constitute tunnel sides. Upon the bottom of the boat is secured a suitable bearing bracket 41 through which is journaled a rock shaft 42 secured to the forward end of a movable tunnel member 43 which is of trough shape as shown and which carries forwardly extending arms 44 connected by a cross rod 45 formed centrally with an elongated guide loop 46 which extends substantially vertically. This movable tunnel member may be equipped with exactly the same raising and lowering device and locking means therefor as described in the first form of the invention. It is however to be noted that the stern of the boat is formed with an inclined portion 47 against which the movable tunnel will lie when in its raised position.

Pivoted at 48 on the underside of the boat hull between the tanks 40 is a rearwardly extending arm 49 which is guidably received within the loop 46 and which carries a depending arm 50 having a bearing 51 for the propeller shaft 52 which is connected with the drive shaft D by a universal joint 53.

Pivoted at 54 on the boat bottom is a shoe 55 which has its rear end supported by the lower end of the arm 50 and which is engageable with the ground in case the boat is propelled in shoal water.

In this form of the invention it will be seen that under normal conditions that is when traveling in deep water, the arm 49 will be in its lowermost position with the propeller located considerably below the bottom of the boat and with the movable tunnel member 43 swung into horizontal position. The water pressure will really operate to hold this tunnel member in its raised position even though the locking means be released or omitted. When the boat is propelled in shoal water which might cause damage to the propeller, the shoe or skid 55 will strike against the bottom and this will cause upward swinging movement of the arm 49 and the propeller shaft simultaneously with downward movement of the tunnel member 43. This form of the device is very efficient inasmuch as this tunnel structure will cause no appreciable drag and will therefore not interfere with the power or speed of the boat.

From the foregoing description and a

study of the drawings it will be apparent that I have thus provided a simply constructed tunnel structure and propeller mounting for boats whereby the boat may travel in shoal water without danger of injury to the propeller, as the propeller will automatically be moved upwardly out of any possible engagement with the bottom. Owing to the simplicity of the construction and the fewness of the parts it is apparent that there is very little to get out of order and that the device should consequently have a long life and satisfactorily perform all the functions for which it is intended.

While I have shown and described the preferred embodiment of the invention, it is of course to be understood that I reserve the right to make such changes in the form, construction and arrangement of parts as will not depart from the spirit of the invention or the scope of the subjoined claims.

Having thus described my invention I claim:

1. In a boat, a pair of tunnel members hingedly connected with each other at their meeting ends and having their other ends hingedly connected with the boat hull, a bearing member carried by one of the tunnel members, a propeller carrying shaft journaled through said bearing member and flexibly connected with the main drive shaft, and a shoe pivoted upon the bottom of the hull and extending below said propeller for elevating said tunnel members when engaging the bottom in shoal water.

2. In a boat, a pair of tunnel members hingedly connected with each other at their meeting ends and having their other ends hingedly connected with the boat hull, a bearing member carried by one of the tunnel members, a propeller carrying shaft journaled through said bearing member and flexibly connected with the main drive shaft, and a shoe pivoted upon the bottom of the hull and extending below said propeller for elevating said tunnel members when engaging the bottom in shoal water, the rear end of the rearmost tunnel member being pivoted upon rearwardly extending arms carried by a hull, a cross member connecting the rear extremities of said arms and formed with a bearing, and a rudder post journaled through said last named bearing.

3. In a boat, a pair of tunnel members hingedly connected with each other at their meeting ends and having their other ends hingedly connected with the boat hull, a bearing member carried by one of the tunnel members, a propeller carrying shaft journaled through said bearing member and flexibly connected with the main drive shaft, and a shoe pivoted upon the bottom of the hull and extending below said propeller for elevating said tunnel members when engaging the bottom in shoal water, and means for locking said tunnel members in either selected position.

4. In a boat, a pair of tunnel members hingedly connected with each other at their meeting ends and having their other ends hingedly connected with the boat hull, a bearing member carried by one of the tunnel members, a propeller carrying shaft journaled through said bearing member and flexibly connected with the main drive shaft, and a shoe pivoted upon the bottom of the hull and extending below said propeller for elevating said tunnel members when engaging the bottom in shoal water, and means for locking said tunnel members in either selected position, consisting of a shaft connected with the tunnel members and passed up through the hull and provided with a handle, and catch means for holding said last named shaft in longitudinally adjusted position.

5. In a boat having the bottom of its hull inclined upwardly and rearwardly at its rear end, a propeller mounting comprising a pair of arms secured to the hull and extending rearwardly beyond the stern thereof, a tunnel member formed of front and rear sections pivoted in overlapping relation, the forward section being pivoted at its forward end to the underside of the hull at the front end of said inclined portion and the rear end of the rear section being pivotally connected with said arms, a cross member carried by the tunnel members at their point of connection and formed with a bearing, a propeller carrying shaft journaled through said bearing and having a flexible connection with the main drive shaft, an extension on said cross member, and a shoe pivoted upon the hull at the forward end of said inclined portion and extending below and rearwardly beyond the propeller and connected with said extension.

6. In a boat having the bottom of its hull inclined upwardly and rearwardly at its rear end, a propeller mounting comprising a pair of arms secured to the hull and extending rearwardly beyond the stern thereof, a tunnel member formed of front and rear sections pivoted in overlapping relation, the forward section being pivoted at its forward end to the underside of the hull at the front end of said inclined portion and the rear end of the rear section being pivotally connected with said arms, a cross member carried by the tunnel members at their point of connection and formed with a bearing, a propeller carrying shaft journaled through said bearing and having a flexible connection with the main drive shaft, an extension on said cross member, and a shoe pivoted upon the hull at the forward end of said inclined portion and extending below and rearwardly beyond the propeller, and means for hold-

ing the tunnel members at a selected position, the shoe being secured to said extension.

7. In a boat, a pair of tunnel members, one tunnel member being movably mounted, a pivoted arm connected with the movable tunnel member and carrying a bottom engaging skid, a bearing carried by the arm, and a movable shaft mounted in the bearing, carrying a propeller and flexibly connected with the drive shaft of the boat.

In testimony whereof I affix my signature.

JOHN D. PARK, JR.