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BOAT PROPELLER

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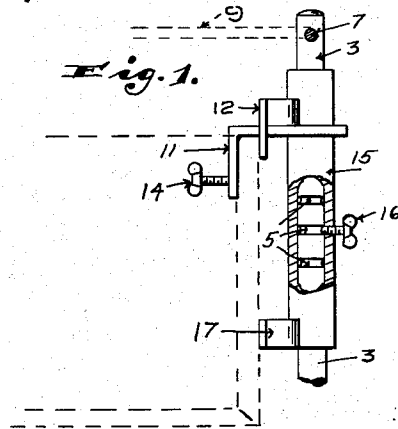
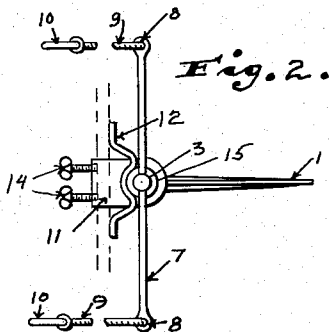
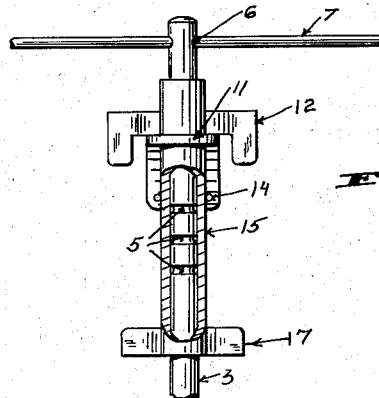
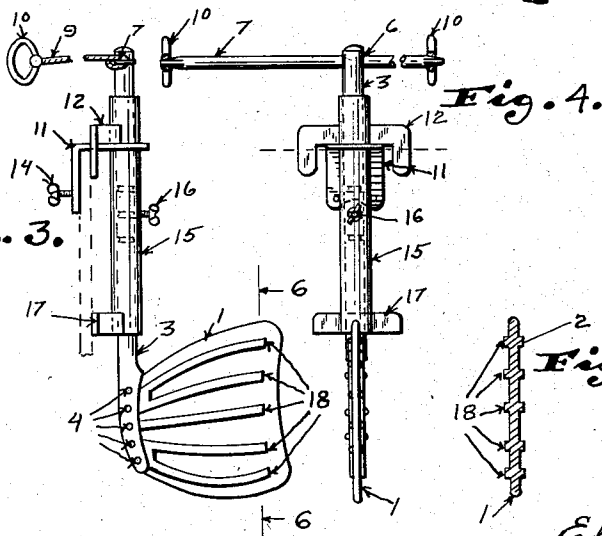
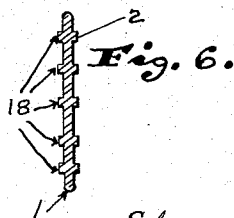


**Fig. 4.**



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## UNITED STATES PATENT OFFICE

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## BOAT PROPELLER

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5 Claims. (Cl. 115—28)

This invention relates to certain new and useful improvements in boat propellers.

The principal objects of this invention are:

First, to provide a method of boat propulsion simulating the action of a fish's tail;

Second, to provide a method of boat propulsion which can be operated by hand, foot, or mechanical motive power;

Third, to provide a method of boat propulsion which will eliminate the use of oars in propelling a rowboat;

Fourth, to provide a simple mechanism for boat propulsion which can be easily and quickly attached to or detached from a boat without the use of tools;

Fifth, to provide a simple mechanism for boat propulsion which will be inexpensive to manufacture; and

Sixth, to provide a method of boat propulsion having such other advantages as shall hereinafter appear.

With the foregoing objects in view, this invention consists of the combination and arrangement of its parts as is hereinafter more fully described, as illustrated in the accompanying drawing, and as set forth in the claims therefor.

In the accompanying drawing, consisting of one sheet, forming a part hereof:

Fig. 1 is a side elevation, partially in section, of sleeve, bracket and shaft assembly of device.

Fig. 2 is a plan view of mechanism.

Fig. 3 is a side elevation of mechanism.

Fig. 4 is a front elevation of mechanism.

Fig. 5 is a front elevation, partially in section, of sleeve, bracket and shaft assembly of device.

Fig. 6 is a cross-section on line 6—6 of Fig. 3.

Referring more particularly to the drawing, this invention consists of propeller blade 1 reinforced by spring ribs 2 or spring ribs 18, a shaft 3 having a series of three or more grooves 5 and an aperture 6, a cross-arm 7 having at each extremity eyes 8, two operating ropes or chains 9 each equipped with D-type or ring-type handles 10, an upper suspension bracket 12, an attaching bracket or clamp 11 having two thumb screws 14 fitting into threaded apertures therein, a shaft sleeve 15 equipped with a thumb screw 16 fitting into a threaded aperture in sleeve 15, and a lower suspension bracket 17.

Propeller blade 1, which is intended to be constructed of flexible material, may be reinforced with a series of five or more spring ribs 2 imbedded therein, as shown in Fig. 5, or it may be reinforced with a series of five or more spring ribs 18 applied to the surface of propeller blade

1, as shown in Fig. 3, or not so reinforced. Spring ribs 2 or 18 may, or may not, be employed in construction, depending upon the type of flexible material used in propeller blade 1.

5 Shaft 3 is cylindrical and straight, except for its bifurcated portion which is drawn slightly from a true cylindrical form and curved somewhat, as shown in Figs. 1, 3 and 5. The lower extremity of shaft 3 is bifurcated to receive and secure the propeller blade 1, which is secured in such bifurcated portion by means of bolts or rivets 4. The upper extremity of shaft 3 has an aperture 6 extending through its diameter to receive and secure cross-arm 7. Approximately 10 equidistant between its extremities shaft 3 has a series of three or more grooves 5 following its circumference. Grooves 5, in conjunction with thumb screws 16 extending through a threaded aperture in sleeve 15, are intended to provide a means of vertically positioning shaft 3 and a means for adjusting such vertical positioning.

Cross-arm 7 extends equidistant laterally from shaft 3 and terminates at each extremity in an eye 8 for receiving operating ropes or chains 9. The free ends of the operating ropes or chains 9 are equipped with D-type or ring-type handles 10.

The propeller blade and shaft assembly pivotally moves within sleeve 15. The cylindrical sleeve 15 is vertically suspended in parallel relation to the stern of the boat by means of an upper suspension bracket 12 which engages with angular clamp 11. The clamp 11 is angular in form, as shown in Fig. 3, and has an aperture for fixedly receiving the cylindrical sleeve 15. Suspension bracket 12 is substantially M-shaped, as is shown in Fig. 2, with two legs extending angularly from its extremities. Clamp 11 engages the inner side of the stern board of the boat, as shown in Fig. 3, and suspension bracket 12 engages the outer side of the stern board, as shown in Fig. 3. Pressure for rigidly affixing the device to the boat is applied by means of two thumb screws 14 extending through threaded apertures in clamp 11. Cylindrical sleeve 15 is positioned from the stern of the boat and rigidly maintained by means of a substantially M-shaped suspension bracket 17, as shown in Figs. 1 and 3.

Once attached to a rowboat, the mechanism is put in operation by the alternate pulling of the operating ropes or chains 9. The steering of the boat is also accomplished by the use of operating ropes or chains 9. While the mechanism is illustrated as being hand operated, it may also be equipped for foot and power operation.

What I claim is:

1. In a boat propulsion mechanism of the class described, a detachable affixing assembly comprising a cylindrical sleeve having two suspension brackets laterally abutting each extremity, a thumb screw extending through a threaded aperture therein, and an angular clamp having an aperture to fixedly receive said cylindrical sleeve and equipped with two thumb screws, substantially as described.
2. In a boat propulsion mechanism of the class described, a propeller shaft assembly comprising a cylindrical shaft bifurcated at one extremity and having an aperture extending through the diameter of its other extremity and a series of three or more grooves following its circumference approximately equidistant from its extremities, a cross-arm extending through said aperture equidistant laterally from said shaft, and a flat flexible propeller blade reinforced by five or more resilient ribs imbedded therein secured in the bifurcated portion of said cylindrical shaft, substantially as described.
3. In a boat propulsion mechanism of the class described, a propeller shaft assembly comprising a cylindrical shaft bifurcated at one extremity and having an aperture extending through the diameter of its other extremity and a series of three or more grooves following its circumference approximately equidistant from its extremities, a cross-arm extending through said aperture equidistant laterally from said shaft, and a flat flexible propeller blade reinforced by five or more resilient ribs applied to the surface thereof secured in the bifurcated portion of said cylindrical shaft, substantially as described.
4. A boat propulsion mechanism comprising a cylindrical shaft bifurcated and slightly bent at one extremity and having an aperture extending through its diameter at its opposing extremity and having at a point approximately equidistant from its extremities a series of three or more

grooves following its circumference, a flat flexible propeller blade reinforced by five or more resilient ribs imbedded therein secured in the bifurcated extremity of said shaft, a cross-arm having apertures in both extremities extending equidistant laterally from said shaft, two operating ropes or chains extending from the apertures in said cross-arm and terminated by D-type or ring-type handles, a cylindrical sleeve having two suspension brackets laterally abutting each extremity and a thumb screw extending through a threaded aperture approximately equidistant from its extremities, and an angular attaching bracket or clamp equipped with thumb screws and having an aperture for fixedly receiving the said sleeve, said shaft being pivotly movable within said sleeve, substantially as described.

5. A boat propulsion mechanism comprising a cylindrical shaft bifurcated and slightly bent at one extremity and having an aperture extending through its diameter at its opposing extremity and having at a point approximately equidistant from its extremities a series of three or more grooves following its circumference, a flat flexible propeller blade reinforced by five or more resilient ribs applied to the surface thereof secured in the bifurcated extremity of said shaft, a cross-arm having apertures in both extremities extending equidistant laterally from said shaft, two operating ropes or chains extending from the apertures in said cross-arm and terminated by D-type or ring-type handles, a cylindrical sleeve having two suspension brackets laterally abutting each extremity and a thumb screw extending through a threaded aperture approximately equidistant from its extremities, and an angular attaching bracket or clamp equipped with thumb screws and having an aperture for fixedly receiving the said sleeve, said shaft being pivotly movable within said sleeve, substantially as described.

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