(No Model.) 2 Sheets—Sheet 1.

L. GILLESPIE.

PROPELLER FOR BOATS.

No. 451,731. Patented May 5, 1891.

Fig. 1.

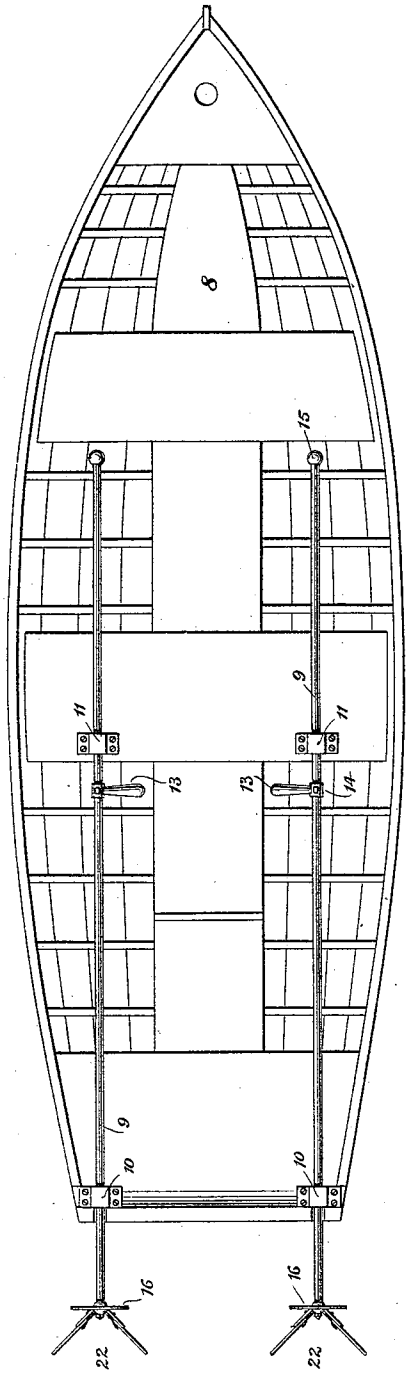
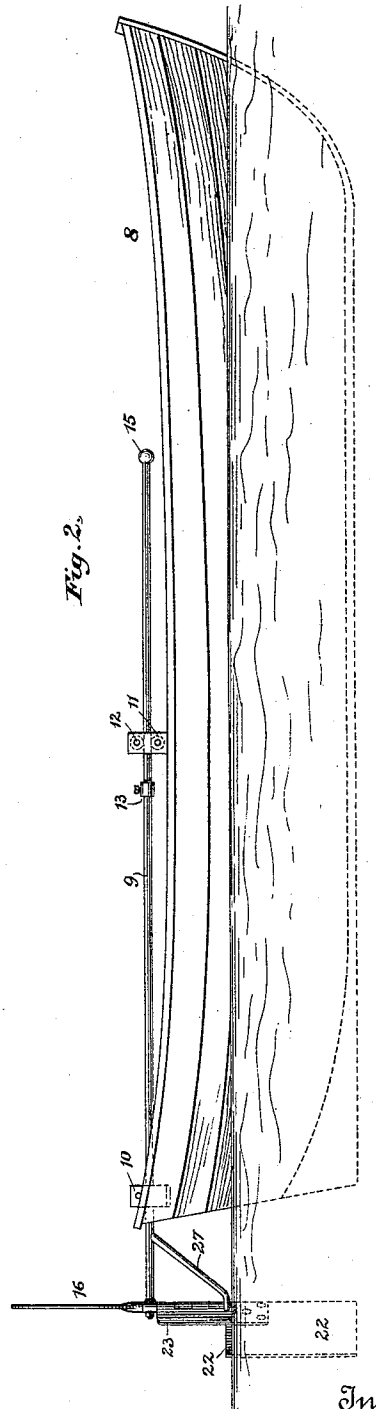


Fig. 2.



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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Fig. 4.

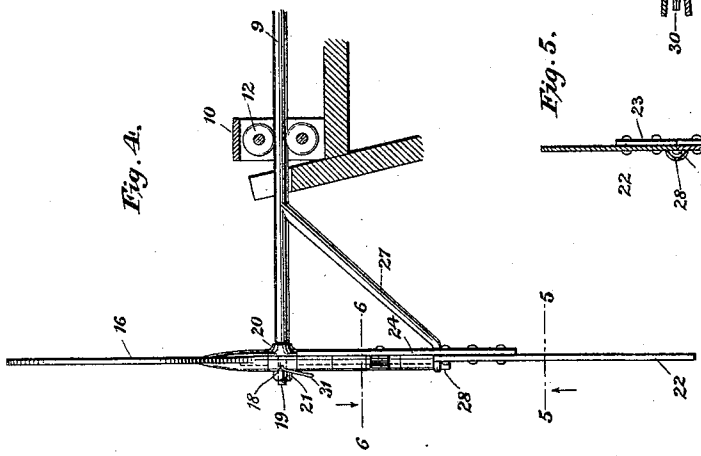


Fig. 6.

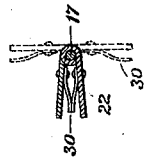
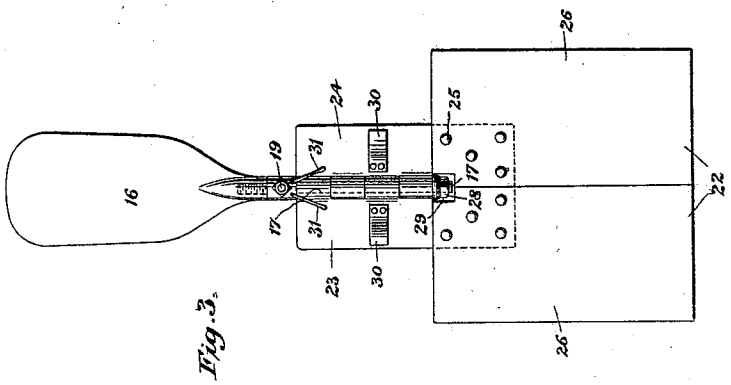


Fig. 5.

Fig. 3.



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UNITED STATES PATENT OFFICE.

LEWIS GILLESPIE, OF SAN ANTONIO, TEXAS, ASSIGNOR OF ONE-HALF TO McLEARY & FLEMING, OF SAME PLACE.

PROPELLER FOR BOATS.

SPECIFICATION forming part of Letters Patent No. 451,731, dated May 5, 1891.

Application filed September 4, 1890. Serial No. 363,886. (No model.)

To all whom it may concern:

Be it known that I, LEWIS GILLESPIE, a citizen of the United States, residing at San Antonio, county of Bexar, State of Texas, have invented certain new and useful Improvements in Propellers for Boats, of which the following is such a full, clear, and exact description as will enable any one skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to means for propelling a boat or vessel, preferably by hand; and it consists in the hereinafter described and claimed parts and combination of parts, whereby the boat may be moved forward or backward and stopped and may be readily turned and steered to one side or the other.

In the accompanying drawings, illustrating my invention, and wherein like figures of reference indicate like and corresponding parts throughout, Figure 1 is a top plan view of an ordinary rowboat provided with my improved propelling apparatus, and Fig. 2 is a side view of the same. Fig. 3 is an enlarged end view of the propelling apparatus looking in the direction toward the stern of the boat, the hinged propeller-blades being shown as opened to their extreme limit of movement. Fig. 4 is a side view of the parts shown in Fig. 3 with the addition of a portion of the stern of the boat, which is shown in longitudinal section. Fig. 5 is a horizontal sectional view of the hinged propeller-blades, taken on a plane indicated by line 5 5 in Fig. 4. Fig. 6 is a horizontal sectional view taken on a plane indicated by line 6 6 in Fig. 4, the hinged propeller-blades being shown in full lines as closed and in dotted lines as opened.

Referring to the drawings, 8 designates an ordinary rowboat which is provided with my improved apparatus, the parts of which are duplicated upon each side of the boat, so that the following description of one set of parts will serve for both. A rod 9 is mounted horizontally and substantially parallel with the line of length of the boat in such a manner as to be capable of being reciprocated on its length and rotated on its axis in suitable bearings 10 and 11, the former of which is located at the stern of the boat under the gunwale, and the latter is fixed near the center of length of the boat. Each of the bearings 10 and 11 are provided, preferably, with anti-friction rollers 12 to make the operation of the rod easier and smoother. This rod is to be operated by hand, and to that end it is provided with a handle 13, mounted upon the rod by means of a set-screw 14, so that it may be readily adjusted along the length of the rod. The inner limit of movement of the rod—that is, the movement thereof toward the bow of the boat—may be limited by the handle 13 striking against the bearing 11; but of course, if preferred, additional stops on the rod may be provided for this purpose. The extreme outer or opposite limit of movement from the one just described of the rod is limited by means of the removable cap 15, mounted upon the end of the rod.

Upon the outer end of the rod 9 is mounted a fixed propeller-blade 16, which has its axis preferably at right angles to the rod, likewise the plane thereof. The blade 16 is formed with a stem 17, which is formed near the blade with a perforation 18, through which the reduced screw-threaded end 19 of the rod 9 extends. A collar 20 is mounted upon the stem 17 at this point, and is provided upon two opposite sides with openings arranged in alignment for the end of the rod 9 to pass through. The blade 16 is secured to the end of the rod 9 by means of a nut 21 on the screw-threaded end of the latter.

Upon the stem 17 of the fixed propeller 16, and opposite thereto in relation to the rod 9, are mounted a pair of hinged propeller-blades 22, which are preferably arranged so as to swing each through about a quadrant on the axis of the stem or a continuation thereof. The hinged propeller-blades 22 may of course each consist in a single blade hinged so as to swing on an axis at right angles to the propeller-rod 9; but in the present construction I have shown the blades as composed of two pieces, and will now proceed to describe the construction of the same. The plates or leaves 23 24 constitute, essentially, the leaves of an ordinary two-leaf hinge, the hinge-pin

of which is the stem 17 of the fixed propeller 16. The leaves or plates 23 24 are extended at one end beyond the end of the hinge-pin 17, and to such extensions are secured, by means of rivets 25 in the present case, the flat plates 26, which are arranged each in the same plane with its hinge-leaf, so as to move therewith. In order to brace the propellers, I provide a brace-rod 27, which extends from the shaft 9 and has its end formed with an eye through which passes the stem or hinge-pin 17, on the lower end of which latter is mounted a nut 28, which, when screwed up against the brace-rod 27, serves to hold the parts tightly together. The propeller-blades 22 are cut away at 29, so that they will clear the end of the brace-rod 27 and the nut 28 during their movements. Each of the propeller-blades is adapted to swing through about a quarter of a circle and to close and open on each other, as indicated clearly in Fig. 6, wherein their two limits of extreme movements are shown in full and dotted lines, respectively. One limit of their movement is obviously affected by the blades closing on each other, and the other is affected by the inner edges thereof striking against each other, as shown more particularly in Fig. 5. These hinged propeller-blades are closed on each other when moved through the water in one direction, in order to reduce to the minimum their resistance to the water, and are opened into about the same plane by the action of the water when they are moved in the opposite direction, in order that they may offer the greatest resistance to the water. In order to prevent the blades from being closed flatly on each other, which might possibly prevent their being opened by the action of the water when desired, I provide stops in the way of springs 30, which consist in flat springs secured one to each propeller-blade in such a manner that they may come in contact with each other when the blades are closed, and may serve to prevent the complete closing of the same, as shown in Fig. 6.

From the above description of various parts of the apparatus the operation thereof will be readily understood. The handles 13 are arranged so that when they project horizontally toward each other, as shown in Figs. 1 and 2, the hinged propeller-blades will stand vertically in the water, while the fixed propeller blade or paddle 16 will stand vertically out of the water. As the hinged propellers are arranged so as to swing in a direction away from the stern of the boat in closing on each other, the boat may be propelled forward by a person seated, for instance, in the stern of the boat grasping the handles and reciprocating the rods 9 9. The hinged propeller-blades are shown in Figs. 1 and 2 as opened about half-way. When the operator moves the propeller-rods to their innermost limit of movement, the propeller-blades 22 will close on each other, owing to the resistance of the water, and when the operator forces the rods outwardly from the boat the propellers will be thrown open by the action of the water, and as the stroke continues they will serve to push the boat forward in an obvious manner. As the pairs of hinged propeller-blades may be operated independently of each other, one of them may be worked while the other is held at rest, or they may both be operated together. By turning the rods through half of a revolution, so that the handles 13 project horizontally and in a direction away from each other, the operator may readily bring the fixed propeller-blades 16 into play and move the hinged propellers out of the water. The fixed blades may be obviously used for several purposes. For instance, they may be used, if desired, to propel the boat forward by first turning them to horizontal position, then moving them in toward the stern of the boat and throwing them into the water, then forcing them outwardly, and at the outward limit of their movement raising them out of the water by turning them into horizontal position and repeating this operation. The boat can be quickly stopped by throwing the stationary or fixed propellers 16 into the water when they are at their extreme outer limit of movement and then moving them suddenly inwardly toward the stern of the boat, and the boat may be moved backward or reversed by throwing the fixed propellers into the water when at their outer limit of movement and making a forward stroke, then raising them out of the water and making a backward stroke, and again entering them into the water and making a forward stroke. The boat can be steered in any direction by a harder or lighter stroke on one of the propellers, and it can be turned by placing one fixed propeller and a pair of the hinged propeller-blades in the water at the same time and moving the rods 9 simultaneously in opposite directions.

There are many ways in which my invention may be carried into effect, and I therefore do not wish to be understood as limiting myself to the precise constructions herein shown and described, since the invention contemplates many modifications of the same.

To prevent waves, cross-currents, or other causes from displacing the exact position of the propellers when the stroke is about to be made, I employ the prongs 31 31, which in the construction shown are preferably secured to the collar 20 and project downwardly and away from each other, so as to be engaged by the propeller-blades when they swing toward each other. These prongs may be made resilient, in which case the springs 30 30 may be dispensed with, if desired.

Having thus described my improvements in propellers for boats, what I claim as my invention, and desire to secure by Letters Patent, is—

1. A boat-propeller comprising a reciprocating and rotatable rod provided with a fixed propeller-blade projecting at right angles there-

from, and a pair of hinged propeller-blades mounted on the rod and projecting in an opposite direction from the fixed propeller, whereby either the fixed propeller-blade or the hinged propeller-blades may be brought into play at will by rotating the rod, for the purpose set forth.

2. A boat-propeller comprising a reciprocating rod having mounted upon the end thereof a hinge with two leaves with their axes normal to the rod and adapted to close on each other and to open into about the same plane, and a plate secured to each leaf of the hinge in the same plane with the leaf and moving therewith, substantially as and for the purpose set forth.

3. The combination, with a boat, of a pair of reciprocating and rotatable rods, mounted one at each side of the boat and adapted to be operated by hand, each rod provided with a fixed propeller-blade having its axis at about right angles to the rod, and a pair of hinged propeller-blades having their axes parallel to the axis of the fixed blade, substantially as and for the purpose set forth.

4. The combination, with a boat, of one or more reciprocating and rotatable rods 9, adapted to be operated by hand and provided with a fixed propeller-blade 16, projecting practically at right angles therefrom, and a pair of hinged propeller-blades 22 22, mounted on the rod and extending at about right angles therefrom and in an opposite direction from the fixed propeller-blade 16, substantially as and for the purpose set forth.

5. The combination, with a boat, of one or more reciprocating rods 9, adapted to be operated by hand, a pair of swinging plates or leaves 23 and 24, mounted upon the rod and swinging on a common axis at right angles to the rod, and a blade 26, secured to each of the plates 23 and 24 and moving therewith, substantially as and for the purpose set forth.

6. The combination, with a boat, of one or more reciprocating and rotatable rods 9, a fixed propeller-blade 16, provided with a stem 17 and mounted at right angles on the rod, a pair of swinging propeller-blades 22 22, hinged on the stem 17, so as to swing thereon as an axis, and a brace 27, extending from the rod to the stem 17, substantially as and for the purpose set forth.

7. The combination, with a boat, of one or more reciprocating rods 9, adapted to be operated by hand and provided with a propeller blade or blades at its outer end, and the bearings 10 and 11, provided with the anti-friction rollers 12 12, for mounting the rod 9, substantially as and for the purpose set forth.

8. A boat-propeller having a pair of hinged propeller-blades adapted to swing toward and away from each other, combined with fixed prongs 31 31, adapted to engage with the propeller-blades and hold them from displacement, substantially as and for the purpose set forth.

In testimony whereof I have hereunto set my hand, this 21st day of August, 1890, in the presence of the two subscribing witnesses.

LEWIS GILLESPIE.

Witnesses:
THEODORE MACK,
O. H. TANSEY.