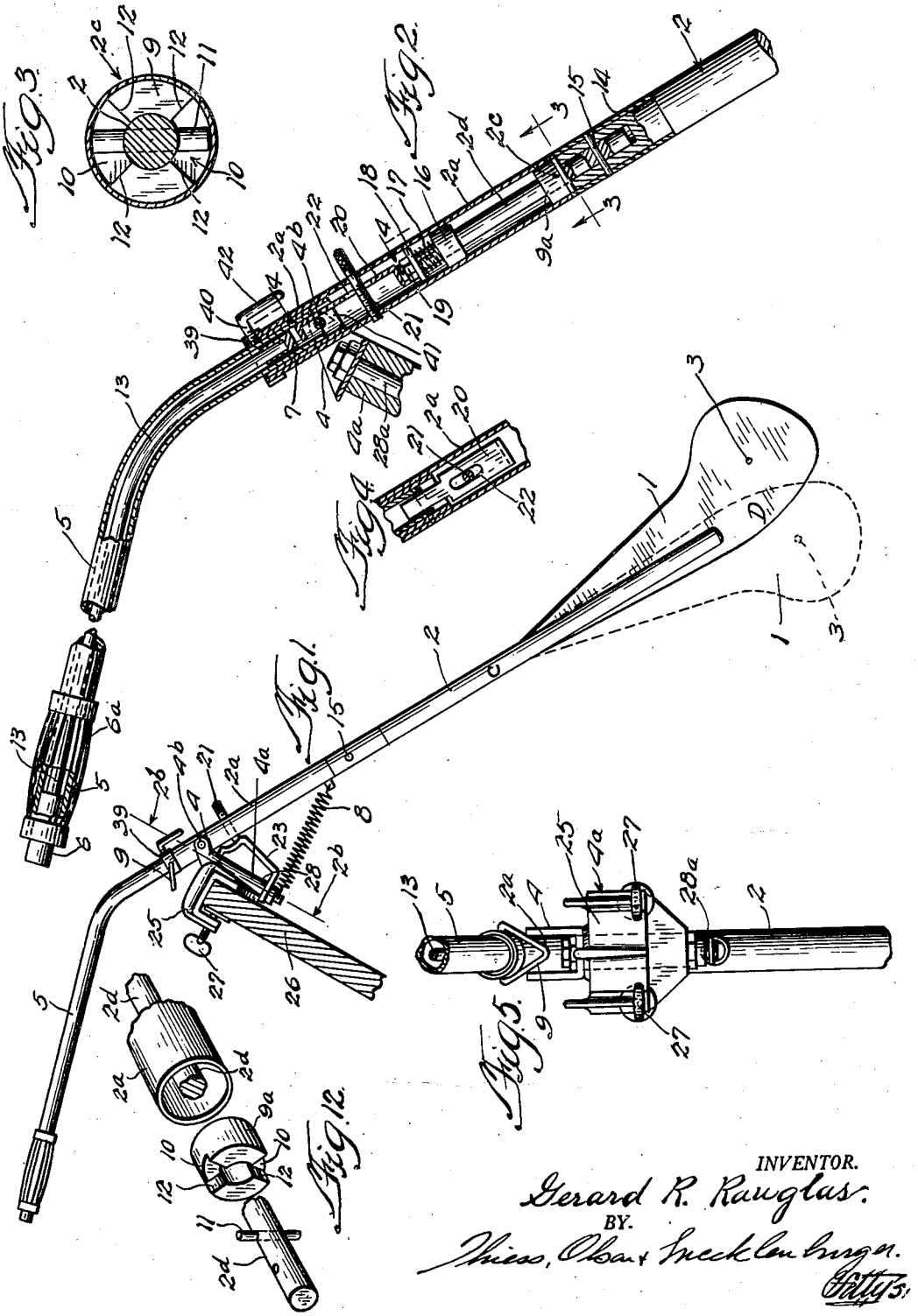
May 26, 1953 G. RAUGLAS 2,639,684

SCULLING APPARATUS

Filed Jan. 10, 1951 2 Sheets-Sheet 1



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SCULLING APPARATUS

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Fig. 6

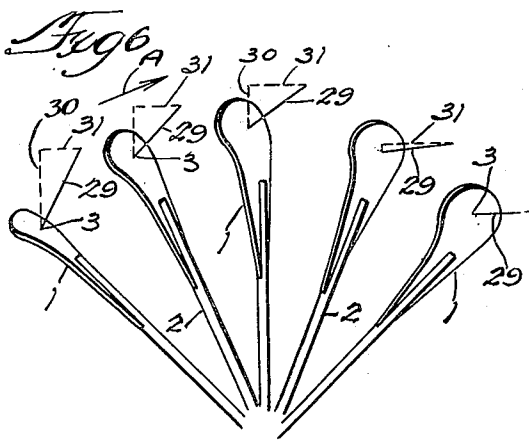


Fig. 7

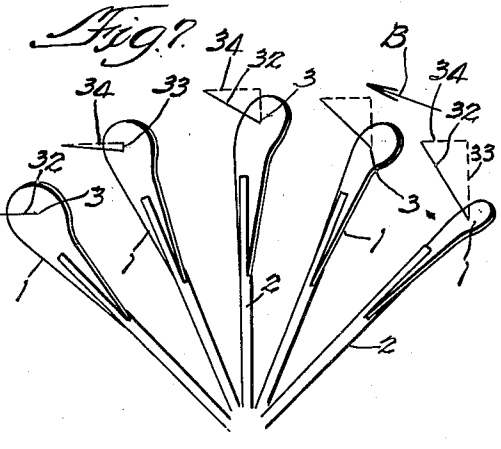


Fig. 8.

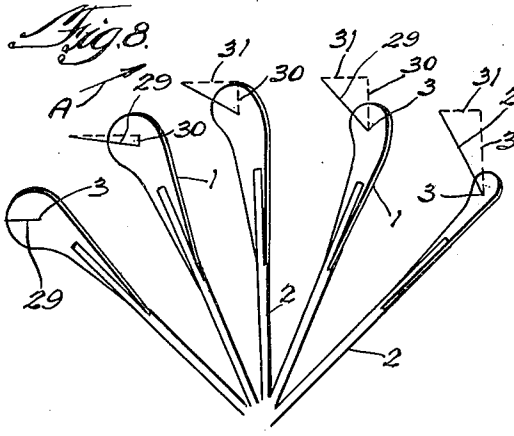


Fig. 9.

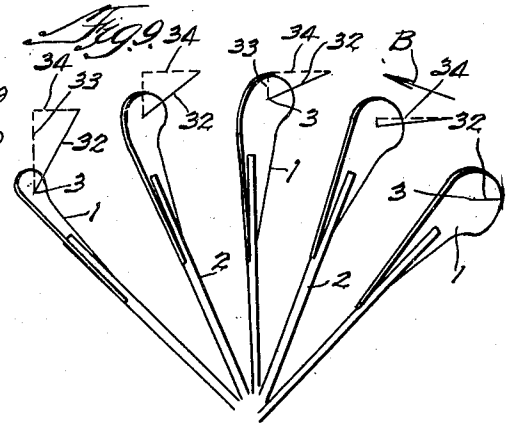


Fig. 10.

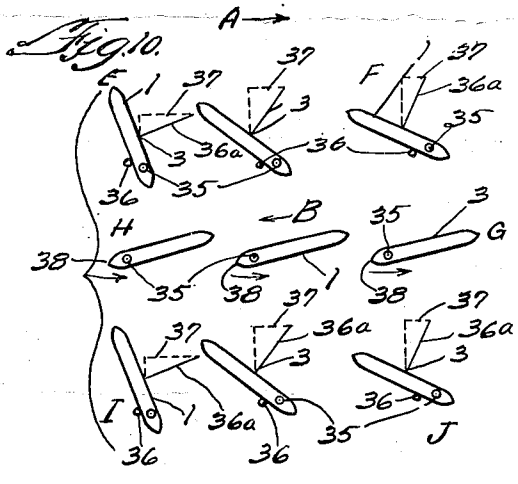
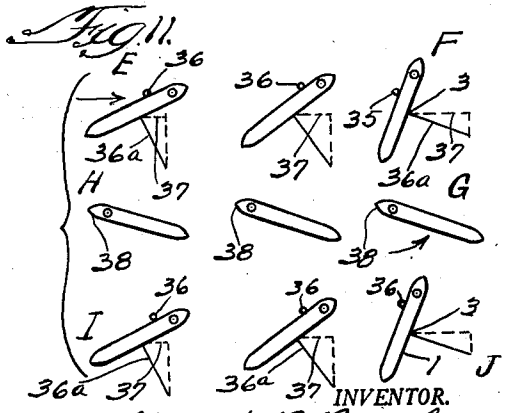


Fig. 11.



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SCULLING APPARATUS

Gerard Rauglas, Minneola, Fla.

Application January 10, 1951, Serial No. 205,387

10 Claims. (Cl. 115—30)

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My invention relates to sculling apparatus and is a continuation-in-part of my copending application, Serial No. 61,606, filed November 23, 1948.

One of the objects of my invention is to provide an improved sculling apparatus provided with an automatic reverse.

A further object of my invention is to provide an improved sculling apparatus which feathers automatically for tacking and quick maneuvering.

A further object is to provide an improved sculling apparatus which will insure easy one-hand operation.

A further object is to provide an improved sculling apparatus having the easy one-hand operation which gives full freedom for immediate use of tackle, camera, or gun.

A further object is to provide an improved sculling apparatus which can be tilted and retained out of water when an outboard motor is in use.

A further object is to provide an improved sculling apparatus which will be light and durable.

A further object is to provide a sculling apparatus in which the apparatus may be changed from its forward drive condition to its reverse drive condition by a one-hand operation of the hand which is operating the paddle without removing the hand from its paddling position.

A further object of my invention is to provide improved sculling apparatus by means of which the direction in which the boat is pointing may be changed without substantial movement of the boat forward or backward by a one-hand operation of the hand which is operating the paddle without removing the hand from its paddling position.

A further object of my invention is to provide improved means for changing the range of oscillation of the paddle shaft caused by the reaction of the water.

Further objects and advantages of the invention will be apparent from the description and claims.

In the drawings in which the dimensions are substantially to scale,

Figure 1 is a side elevational view of the sculling apparatus secured to the transom at the rear of the boat;

Fig. 2 is a side elevation, parts being broken away, showing the paddle shaft and operating arm;

Fig. 3 is a section on the line 3—3 of Fig. 2,

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showing the means for determining the range of oscillation of the paddle shaft;

Fig. 4 is a section on the line 4—4 of Fig. 2, showing part of the transmission between the hand-operated plunger and the reciprocable paddle shaft;

Fig. 5 is a front view of the bearing bracket on which the paddle shaft bearing is rockably mounted and swiveled;

Fig. 6 is a diagrammatic plan view showing different positions successively assumed by the paddle in its oscillating movement when the apparatus is set for forward drive and the paddle shaft is moved from left to right;

Fig. 7 is a diagrammatic plan view showing different positions successively assumed by the paddle in its oscillating movement when the apparatus is set for forward drive and the paddle shaft is moved from right to left;

Fig. 8 is a diagrammatic plan view showing different positions successively assumed by the paddle in its oscillating movement when the apparatus is set for rearward drive and the paddle shaft is moved from left to right;

Fig. 9 is a diagrammmatic plan view showing different positions successively assumed by the paddle in its oscillating movement when the apparatus is set for rearward drive and the paddle shaft is moved from right to left;

Fig. 10 is a diagrammatic view showing in transverse cross section positions successively assumed by the blade when set for forward drive for turning the boat counterclockwise when viewed in plan without substantial fore-and-aft movement when the blade is set for forward drive;

Fig. 11 is a diagrammatic view showing in transverse cross section positions successively assumed by the blade when set for rearward drive for turning the boat counterclockwise when viewed in plan without substantial fore-and-aft movement when the blade is set for rearward drive, and

Fig. 12 is an exploded perspective view showing a detail of the oscillation limiting sleeve and part of the paddle shaft.

The construction shown in the drawing comprises a sculling apparatus including an oscillatable paddle 1, a shaft 2 for said paddle oscillatable therewith, and means for mounting said shaft and paddle for oscillation on a boat and controlling its movement comprising a bearing member 2^a oscillatable back and forth about an upwardly extending axis 2^b, means for mounting said shaft in said bearing member for rotative

adjustment about the axis of said shaft and securing it in different adjusted positions and enabling oscillation of said shaft about its axis by reaction of the water on the paddle, means 2^c for limiting the oscillating movement of the shaft in different positions of rotative adjustment of the shaft, the virtual center 3 of reactive force of the water on the paddle being offset forwardly with respect to the axis of the shaft 2 in one position of rotative adjustment of the shaft and being offset rearwardly of said axis in another position of rotative adjustment of the shaft to enable the reaction of the water on the paddle to cause oscillation of the shaft, said mounting means including a yoke 4, oscillatable in a bearing sleeve bracket 4^a about the axis 2^b in which yoke the bearing member 2^a is rockably mounted on the pivot pin 4^b, enabling the bearing member 2^a to be oscillated about a substantially horizontal axis transverse to the axis of the shaft 2 to enable the paddle 1 to be raised and lowered with respect to the water, said movement controlling means comprising a rock arm 5 secured to said bearing member 2^a for oscillating it about said upwardly extending axis for controlling movement of the boat and oscillating it about said transverse axis to enable the paddle to be raised and lowered with respect to the water, force-transmitting plunger means 6, manually operable by the thumb of the hand on the paddle handle 6^a, coaxial with said arm 5 and reciprocable longitudinally thereof, force-transmitting plunger means 7 coaxial with said shaft 2 and reciprocable longitudinally thereof and actuated by said first plunger means 6, spring means 8 urging the paddle to lowered position, and latch means 9 for holding the paddle in raised position above the water, said oscillation limiting means 2^c comprising a sleeve 9^a, surrounding said shaft 2 and having a pair of notches 10 in an arcuate edge thereof, and a pin 11 oscillatable with said shaft 2 abuttable with the edges 12 of said notch 10 in its oscillation.

Release of blade for feathering

The plunger 7 is mounted for reciprocation in the arm 5 adjacent its lower rear end, and the plunger 6 is mounted for reciprocation in the arm 5 adjacent its upper forward end. The end of the plunger 6 projects outwardly and forwardly from the handle 6^a in convenient position to be operated by the thumb of the hand holding the handle. The plunger 7 is connected for operation from the plunger 6 by means of a curved compression rod 13 extending between and secured to the plungers 6 and 7 and extending through the tubular curved arm 5. The parts are so shaped that the curved rod does not come into contact with the curved tubular arm 5 in its movement.

The upper end of the paddle shaft 2 includes a reinforcing sleeve 14 surrounding it and a push rod 2^d extending into an axial bore in the paddle shaft. The sleeve 14 and rod 2^d are secured to the upper end of the paddle shaft 2 by means of a rivet 15. The rod 2^d is reciprocably mounted in the bearing sleeve 2^a by means of short guide and bearing sleeves 9^a and 16 through which the rod 2^d extends, which sleeves are secured to the bearing sleeve 2^a in any suitable manner, as by brazing or welding. A spring 17 is provided acting between the bearing sleeve 16 and a washer 18 secured to the upper end of the rod 2^d by means of a nut 19.

The rod 2^d on the paddle shaft 2 may be pressed downwardly from the plunger 7 by means of a push bar 20 reciprocably mounted in the bearing sleeve 2^a. This push bar 20 is controlled in its reciprocating movement in the bearing sleeve by means of a screw 21 extending through the bearing sleeve 2^a and through a slot 22 in the push bar and threaded into one side of the bearing sleeve. This adjustable screw 21 also serves to limit the lowermost position of the paddle in the water by engagement with a sub-bracket 23 on the bearing bracket 4^a. The push bar 20 is further guided in its movement by its position with respect to the pivot pin 4^b.

When the oarsman presses down on the plunger or push button 6, he will cause the paddle shaft 2 to be moved downwardly a corresponding amount to free the pin 11 from the notches 10. When thus freed, the operator can cause the paddle to assume any desired position of rotative adjustment in the bearing sleeve 2^a by utilizing the reaction of the water on the blade.

The plunger or push button 6 is mounted for free sliding movement in the handle 6^a. The plunger 7 is mounted for free sliding movement in the lower end of the rock arm 5. The bearing member 2^a is reinforced at its upper end by a sleeve 24 fitting inside the bearing member 2^a and fixedly secured thereto. The lower end of the rock arm 5 fits snugly inside the upper end of this sleeve 24 and is firmly secured thereto.

When the oarsman presses on the push button 6 the plunger 7 moves downwardly, engaging the push bar 20 and pushing it downwardly. The downward movement of the push bar 20 causes downward movement of the push rod 2^d against the resisting action of the spring 17. As the push rod 2^d forms part of the shaft 2, the shaft 2 is moved downwardly, releasing the pin 11 from engagement in the notches 10. In this position of the parts the paddle or blade 1 can feather freely under the reaction of the water against the virtual center of the paddle.

Oscillating, lifting and lowering paddle

The bracket 4^a shown in detail in Figs. 1 and 5 comprises a bracket yoke 25 which straddles the transom 26 of the boat, and the yoke is clamped on the transom by means of clamping screws 27. The bracket 4^a is provided with a bearing sleeve 28 in which the journal 28^a of the yoke 4 is swiveled. For latching the paddle in raised position, the latch 9 is slipped over a hook on the bracket 4^a.

Forward propulsion

For forward propulsion, the blade 1 is set to the position shown in full lines in Fig. 1, which is the position shown in Figs. 6 and 7. The rock arm 5 is then oscillated back and forth through a range of perhaps 90 degrees, as shown in Figs. 6 and 7. Referring, first, to Fig. 6, which shows the clockwise stroke from left to right, the blade 2 is shown in plan view in five successive positions, the motion of the shaft 2 being clockwise as indicated by the arrow A. The lines 29 extending perpendicularly from the virtual center 3 of the blade show the plan view of lines of equal length, indicating the reaction of the water on the blades in the different positions. The parallel fore-and-aft extending lines 30 indicate the forwardly propulsive components of this reactive force in the different blade positions. The parallel transverse lines 31 indicate the lateral components of these reactive forces, which would act to turn the boat counterclockwise. It will be noted that the forward component 30 of the reactive force

is at its maximum in the left-hand lower position and fades out to practically zero in the right-hand blade position. There is much more forward propulsive effect in the left-hand positions of the blades than in the right-hand positions. In all positions, except possibly the extreme right-hand one, there will be a forward propulsive effect and a variable force tending to cause the boat to veer to the right during this stroke.

In Fig. 7, which shows consecutive positions assumed by the blade when set for forward propulsion and moved counterclockwise, as indicated by the arrow B, the lines **32** leading from the virtual center **3** of the blade correspond to the lines **29** extending from the virtual center of the blade in Fig. 6. During the counterclockwise stroke, as viewed in Fig. 7, the forward propulsive reactive force indicated by the lines **33** are at their maximum in the right-hand position and diminish almost to zero in the extreme left-hand position. The horizontal parallel lines **34**, indicating the lateral components of the reactive water forces acting, are at their minimum in the right-hand position of the blade and increase to a maximum in the left-hand blade position. The vertical parallel components **33** indicate forward propulsive forces, and the horizontal dotted lines **34** indicate transverse reacting components. In the blade positions shown in Fig. 7, it will be seen that a strong propulsive effect is exerted during the first half of the stroke and a much less propulsive effect during the latter half of the stroke. In this counterclockwise stroke, the first half of the stroke will cause a forward propulsion of the boat with a veering movement to the right, and the latter half of the stroke will cause a lessened propulsion effect with a more pronounced reaction tending to cause the boat to veer to the right.

Forward or rearward to starboard or port

If the oarsman should desire in general a continuous veering to the right, he would oscillate the oar back and forth between the extreme left-hand position and the central position, in which operation the sum of the right-hand veering components would exceed the sum of the left-hand veering components. Similarly, if he wished to continue to veer to the left, he would oscillate the blade between the central position and the extreme right-hand position. In this operation, the sum of the left-hand veering components would exceed the sum of the right-hand veering components and hence the boat would veer to the left.

Feather shift between forward and rearward propulsion

The blade **1** may be caused to move from the position for forward propulsion shown in full lines in Fig. 1 to the position for rearward propulsion shown in dotted lines by a one-hand operation of the handle **6a** and push button **6**. If the paddle is set in the full-line position shown in Fig. 1, which is the forward propulsion position, and it is desired to shift it to the dotted-line position for rearward propulsion, the paddle is allowed to assume its lowered position under the action of the spring **8**, the button **6** is depressed to release the blade **1** for feathering motion, and the handle **6a** is rapidly depressed, causing the blade **1** to rise rapidly. The reaction of the water on the blade will shift the blade from the full-line position for forward propulsion to the dotted-line position for reverse propulsion. The operator then lifts his thumb from the push button **6**, allowing the spring **17** to act to move the pin **11** into the notches **10**, where the oscillation of the pin will be limited by the shoulders **12**. Similarly, for shifting the blade from the dotted-line position for rearward propulsion to the full-line position for forward propulsion, the oarsman will depress the handle **6a**, press with his thumb on the push button **6** to release the blade **1** for feathering action, and lift up on the handle quickly, causing the blade **1** to move downward quickly. This rapid downward movement of the blade from raised to lowered position will cause the reaction of the water on the blade to flip it quickly from its lowermost position for rearward propulsion to its uppermost position for forward propulsion.

Rearward propulsion

For rearward propulsion, the blade **1** is set to the position shown in dotted lines in Fig. 1, which is the position shown in Figs. 8 and 9. The rock arm is then oscillated back and forth through a range of perhaps 90 degrees, as shown in Figs. 8 and 9. Referring first to Fig. 8, which shows the clockwise stroke from left to right, five successive positions of the blade are shown. The blade **2** is shown in plan view in five successive positions, the motion of the shaft **2** being clockwise as indicated by the arrow A. The lines **29** extending perpendicularly from the virtual center **3** of the blade show the plan view of lines of equal length, indicating the reaction of the water on the blades in the different positions. The parallel fore-and-aft extending lines **30** indicate the forwardly propulsive components of this reactive force in the different blade positions. The parallel transverse lines **31** indicate the lateral components of these reactive forces, which would act to turn the boat counterclockwise. It will be noted that the rearward component **30** of the reactive force is at its maximum in the right-hand lower position and fades out to practically zero in the left-hand blade position. There is much more rearward propulsive effect in the right-hand positions of the blades than in the left-hand positions. In all positions, except possibly the extreme left-hand one, there will be a rearward propulsive effect and a variable force tending to cause the boat to veer to the left during this stroke.

In Fig. 9, which shows consecutive positions assumed by the blade when set for forward propulsion and moved counterclockwise, as indicated by the arrow B, the lines **32** leading from the virtual center **3** of the blade correspond to the lines **29** extending from the virtual center of the blade in Fig. 8. During the counterclockwise stroke, as viewed in Fig. 9, the rearward propulsive reactive force indicated by the lines **33** are at their maximum in the left-hand position and diminish almost to zero in the extreme right-hand position. The horizontal parallel lines **34**, indicating the lateral components of the reactive water forces acting, are at their minimum in the left-hand position of the blade and increase to a maximum in the right-hand blade position. The vertical parallel components **33** indicate rearward propulsive forces and the horizontal dotted lines **34** indicate transverse reacting components. In the blade positions shown in Fig. 9, it will be seen that a strong propulsive effect is exerted during the first half of the stroke and a much less propulsive effect during the latter half of the stroke. In this counterclockwise stroke, the first half of the stroke will cause a rearward propulsion of the boat with a veering movement to the left, and

the latter half of the stroke will cause a lessened propulsion effect with a more pronounced reaction tending to cause the boat to veer to the left.

If the oarsman should desire in general a continuous veering to the right, he would oscillate the oar back and forth between the extreme right-hand position and the central position, in which operation the sum of the right-hand veering components would exceed the sum of the left-hand veering components. Similarly, if he wished to continue to veer to the left, he would oscillate the blade between the central position and the extreme left-hand position. In this operation, the sum of the left-hand veering components would exceed the sum of the right-hand veering components and hence the boat would veer to the left.

Turning

For turning the boat about a vertical axis without any substantial forward or rearward movement of the boat and with the blade set to the full line position shown in Fig. 1, the various positions assumed by the blade in three oscillations back and forth are indicated diagrammatically in Fig. 10. The axis about which the blade oscillates is indicated at CD in Fig. 1 and at 35 in Figs. 10 and 11. This would correspond to the position of the center line of the blade shaft 2. The means for limiting the clockwise oscillation of the blade are indicated diagrammatically at 36, this corresponding to one of the shoulders 12. As the blade is moved from position E to position F, the angular position of the stop 36 with respect to the blade axis 35 changes, shifting in a counterclockwise direction. The reaction of the water on the virtual center 3 of the blade indicated by line 36a will cause the blade to lean up against the stop shoulder 36. The turning component of the reaction of the water on the blade is indicated as in Figs. 6–9 by the horizontal lines 37. This component will tend to turn the boat in a counterclockwise direction as viewed from above. In the reverse oscillation of the blade from the position shown at G to the position shown at H, the plunger or push button 6 is pressed to release the paddle shaft 2 from its limiting means (the shoulders 12) to enable the blade to oscillate to feathering position under the reaction of the water as the blade is moved from right to left from position G to position H. During this movement from right to left, the blade will assume an almost horizontal position, being prevented from moving past the dead center by the reactive effect of the water on the front or leading edge 38 of the blade. With the position of the blade shown during this left-hand stroke, there will be little tendency to turn the boat about a vertical axis. When the paddle has been moved to position H, the oarsman releases the push button 6, enabling the oscillation limiting shoulders 12 to again become effective. The positions shown at I and J are duplicates of the positions shown at E and F, the effect of which will be to cause the boat to turn about its vertical axis in a counterclockwise direction. Thus the right-hand strokes will cause a counterclockwise movement of the boat with very little forward propulsive effect, and the left-hand strokes of the paddle will have little if any turning effect on the boat. For clockwise turning, the push button 6 is held depressed during the left to right movement of the blade 1 to enable the blade to feather without any turning effect, and is released during the blade movement from right to left to enable the shoulders 12 to become effective to cause clockwise turning of the boat.

For turning the boat about a vertical axis without any substantial forward or rearward movement of the boat and with the blade set to the dotted-line position shown in Fig. 1, the various positions assumed by the blade in three oscillations back and forth are indicated diagrammatically in Fig. 11. The axis about which the blade oscillates is indicated at CD in Fig. 1 and at 35 in Figs. 10 and 11. This would correspond to the position of the center line of the blade shaft 2. The means for limiting the clockwise oscillation of the blade are indicated diagrammatically at 36, this corresponding to one of the shoulders 12. As the blade is moved from position E to position F, the angular position of the stop 36 with respect to the blade axis 35 changes, shifting in a counterclockwise direction. The reaction of the water on the vertical center 3 of the blade will cause the blade to lean up against the stop shoulder 36. The turning component of the reaction of the water on the blade is indicated as in Figs. 6–9 by the horizontal lines 37. This component will tend to turn the boat in a counterclockwise direction as viewed from above. In the reverse oscillation of the blade from the position shown at G to the position shown at H, the plunger or push button 6 pressed to release the paddle shaft 2 from its limiting means (the shoulders 12) to enable the blade to oscillate to feathering position under the reaction of the water as the blade is moved from right to left from position G to position H. During this movement from right to left, the blade will assume an almost horizontal position, being prevented from moving past the dead center by the reactive effect of the water on the front edge 38 of the blade. With the position of the blade shown during this left-hand stroke, there will be little tendency to turn the boat about a vertical axis. When the paddle has been moved to position H, the oarsman releases the push button 6, enabling the oscillation limiting shoulders 12 to again become effective. The positions shown at I and J are duplicates of the positions shown at E and F, the effect of which will be to cause the boat to turn about its vertical axis in a counterclockwise direction. Thus the right-hand strokes will cause a counterclockwise movement of the boat with very little forward propulsive effect, and the left-hand strokes of the paddle will have little if any turning effect on the boat. For clockwise turning, the push button 6 is held depressed during the left to right movement of the blade 1 to enable the blade to feather without any turning effect, and is released during the blade movement from right to left to enable the shoulders 12 to become effective to cause clockwise turning of the boat.

Details

The pivoted loop latch 9 is mounted on a ring 39 surrounding the upper end of the bearing member 2a. This ring is secured to the bearing member by means of a threaded shank 40 having a threaded engagement with the bearing member 2a and with the reinforcing sleeve 41. A suitable operating handle 42 is provided for the threaded shank. The point of the threaded shank engages the rock arm 5 to hold it in position. The lower end of the rock arm 5 is provided with a pair of oppositely disposed notches which straddle the pivot pin 4b to hold the rock arm 5 against relative rotation with respect to the bearing member 2a.

In Figs. 1, 2, 3, 4, and 5, the drawings are substantially to scale. Fig. 3 is full scale. In Fig. 1 the drawing is substantially a scale of 1 to 6.5.

The drawings in Figs. 2, 4 and 5 are drawn on a scale of approximately 1 to 3.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A sculling apparatus comprising an oscillatable shaft, a paddle affixed to one end thereof, and means for oscillatably mounting said shaft on a boat to control movement of the latter, said means comprising an elongated bearing member mountable on said boat for oscillation about an axis angularly disposed with respect to the longitudinal axis of said member, first shaft-supporting means mounted within said member coaxial to the longitudinal axis thereof for enabling independent oscillation of said shaft relative to said bearing member upon reaction of the water on the surface of the paddle, second means associated with said first means for limiting said shaft to selected sectors of oscillation relative to said bearing member, and third manually adjustable means mounted on said bearing member and operatively connected to said shaft for releasing the latter from the oscillatory limitations effected by said second means.

2. A sculling apparatus comprising an oscillatable shaft, a paddle affixed to one end thereof and having the virtual center of reactive force of the water on the paddle offset laterally with respect to the longitudinal axis of said shaft, and means for oscillatably mounting said shaft on a boat to control movement of the latter, said means comprising an elongated bearing member mountable on said boat for oscillation about an axis angularly disposed with respect to the longitudinal axis of said member, first shaft-supporting means mounted within said member coaxial to the longitudinal axis thereof, for enabling independent oscillation of said shaft relative to said bearing member upon reaction of the water on the surface of the paddle, second means associated with said first means for limiting said shaft to selected sectors of oscillation relative to said bearing member, and third manually adjustable means mounted on said bearing member and operatively connected to said shaft for releasing the latter from the oscillatory limitations effected by said second means.

3. A sculling apparatus comprising an oscillatable shaft, a paddle affixed to one end thereof, and means for oscillatably mounting said shaft on a boat to control movement of the latter, said means comprising an elongated bearing member detachably mounted on said boat for oscillation about an axis angularly disposed with respect to the longitudinal axis of said member, first shaft-supporting means rigidly mounted within said member for enabling said shaft to assume various selected positions of rotative adjustment with respect to said member and to enable independent oscillation of said shaft when in said selected positions of rotative adjustment upon reaction of the water on the surface of the paddle, second means associated with said first means for limiting the amplitude of the independent shaft oscillations when said shaft is in one of said selected positions of rotative adjustment, and third means mounted on said bearing member and operatively connected to said shaft for effecting movement of the latter into and out of said various selected positions of rotative adjustment.

4. A sculling apparatus comprising an oscillatable shaft, a paddle affixed to one end thereof, and means for oscillatably mounting said shaft on a boat to control movement of the latter, said means comprising an elongated bearing member detachably mounted on said boat for oscillation about an axis angularly disposed with respect to the longitudinal axis of said member, first shaft-supporting means mounted within said member for enabling independent oscillation of said shaft relative to and about the longitudinal axis of said bearing member upon reaction of the water on the surface of the paddle, second means mounted on said bearing member and operatively connected to said shaft for effecting movement of the shaft into and out of various selected positions of rotative adjustment relative to and about the longitudinal axis of said bearing member, the virtual center of reactive force of the water on the surface of the paddle being offset laterally in one direction relative to the longitudinal axis of said bearing member, when said shaft is in one selected position of rotative adjustment, to effect forward movement of said boat and being offset laterally in a second direction relative to the longitudinal axis of said bearing member, when said shaft is in a second position of rotative adjustment, to effect rearward movement of said boat, and third means associated with said first means for limiting the amplitude of the independent shaft oscillations when said shaft is in one of said selected positions of rotative adjustment.

5. A sculling apparatus comprising an oscillatable shaft, a paddle affixed to the end thereof and having the virtual center of reactive force of the water on the paddle offset laterally with respect to the longitudinal axis of said shaft, and means for oscillatably mounting said shaft on a boat to control movement of the latter, said means comprising an elongated bearing member mountable on said boat for oscillation about an axis angularly disposed with respect to the longitudinal axis of said member, an elongated bearing member-actuating handle mounted on and extending angularly from said bearing member, first shaft-supporting means rigidly mounted on said bearing member for enabling independent oscillation of said shaft relative to and about the longitudinal axis of said bearing member upon reaction of the water on the surface of the paddle, second means mounted on said handle and operatively connected to said shaft for effecting movement of the latter into and out of various selected positions of rotative adjustment relative to said bearing member, and third means associated with said first means for limiting the amplitude of the independent shaft oscillations when said shaft is in one of said selected positions of rotative adjustment.

6. A sculling apparatus comprising an oscillatable shaft, a paddle affixed to the end thereof and having the virtual center of reactive force of the water on the paddle offset laterally with respect to the longitudinal axis of said shaft, and means for oscillatably mounting said shaft on a boat to control movement of the latter, said means comprising an elongated bearing member mountable on said boat for oscillation about substantially vertical and horizontal axes, the longitudinal axis of said bearing member being angularly disposed with respect to said oscillating axes, an elongated bearing member-actuating handle mounted on and extending angularly from said bearing member, first shaft-supporting means mounted on said bearing member for enabling independent oscillation of said shaft relative to and about the longitudinal axis of said bearing member upon reaction of the water on the surface of the paddle, second finger-actuated

means mounted on said handle and operatively connected to said shaft for effecting movement of the latter into and out of various selected positions of rotative adjustment relative to said bearing member, third means associated with said first means for limiting the amplitude of the independent shaft oscillations when said shaft is in one of said selected positions of rotative adjustment, and fourth means mounted on said bearing member for releasably retaining the latter in a substantially horizontal plane wherein the paddle is spaced from the surface of the water.

7. A sculling apparatus comprising an oscillatable shaft, a paddle affixed to the end thereof and having the virtual center of reactive force of the water on the paddle offset laterally with respect to the longitudinal axis of said shaft, and means for oscillatably mounting said shaft on a boat to control movement of the latter, said means comprising an elongated bearing member mountable on said boat for oscillation about substantially horizontal and vertical axes, and being biased to assume a normal position relative to said horizontal axis wherein said paddle is submerged in the water, the longitudinal axis of said bearing member being angularly disposed with respect to said horizontal and vertical axes, first means for mounting said shaft within said bearing member wherein the longitudinal axes of said shaft and bearing member are coincident, said shaft being oscillatable about its longitudinal axis by reaction of the water on the surface of the paddle, second means provided on said first means for limiting the amplitude of said shaft oscillations when said shaft is in said various selected positions of rotative adjustment, an elongated arm mounted on and extending angularly from said bearing member for effecting oscillatory movement of said bearing member about said horizontal and vertical axes, and third means mounted on said bearing member for releasably retaining said bearing member in an inoperative position wherein said paddle is spaced above the surface of the water.

8. A sculling apparatus comprising an oscillatable shaft, a paddle affixed to one end thereof and submergeable in water, and means for detachably mounting said shaft on a boat for controlling the movement of said boat, said means comprising an elongated bearing member oscillatable about an axis angularly disposed with respect to the longitudinal axis of said member, shaft-supporting means mounted within and coaxial to the longitudinal axis of said bearing member for enabling rotative adjustment of said shaft about its longitudinal axis to various selected positions with respect to said bearing member, second means cooperating with said shaft-supporting means and said shaft for enabling the latter to oscillate independently and about the longitudinal axis of said bearing member by the reaction of the water on the paddle when said shaft is in one of said selected positions of rotative adjustment, the amplitude of said shaft oscillations being dependent upon the selected position assumed by said shaft relative to said bearing member, and plunger means adjustably mounted within said bearing member and operatively connected to said shaft for effecting longitudinal movement of the latter into and out of said selected positions of rotative adjustment with respect to the bearing member.

9. A sculling apparatus comprising an oscillatable shaft, a paddle affixed to one end thereof

and submergeable in water, and means for detachably mounting said shaft on a boat for controlling the movement of said boat, said means comprising an elongated bearing member oscillatable about an axis angularly disposed with respect to the longitudinal axis of said member, a hollow arm mounted on and extending angularly from said bearing member for imparting oscillatory movement to the latter, shaft-supporting means mounted within and disposed coincident to the longitudinal axis of said bearing member for enabling said shaft to be moved to various selected positions of rotative adjustment with respect to said bearing member, said shaft-supporting means including means for enabling independent oscillations of said shaft about the longitudinal axis of said shaft and bearing member by reaction of the water on the paddle surface, the amplitude of said shaft oscillations being limited when said shaft assumes one of said selected positions, and manually actuated plunger means mounted within said arm adjustable axially of said arm and bearing member and operatively connected to said shaft for effecting longitudinal movement of said shaft into and out of said selected positions of rotative adjustment.

10. A sculling apparatus comprising an oscillatable shaft, a paddle affixed to one end thereof and having the virtual center of reaction of water on the surface of the paddle laterally offset with respect to the longitudinal axis of said shaft, and means for detachably mounting said shaft on a boat and controlling the movement of said boat, said means comprising an elongated bearing member oscillatable about substantially horizontal and vertical axes angularly disposed with respect to the longitudinal axis of said member, an elongated hollow handle mounted on and extending angularly from said bearing member for imparting oscillatory movement to the latter, shaft-supporting means mounted within said bearing member for supporting said shaft in coaxial relation with respect to the longitudinal axis of said bearing member and enabling said shaft to be rotatably adjusted about its axes to various selected positions relative to said bearing member, said shaft-supporting means including means whereby said shaft is oscillatable independently about the longitudinal axis of said bearing member by reaction of the water on said paddle surface, the amplitude of said shaft oscillations being limited when said shaft assumes one of said selected positions of rotative adjustment relative to said bearing member, and finger-actuated plunger means operatively connected to said shaft and coaxially mounted within and movable longitudinally of said handle to effect longitudinal movement of said shaft and release the latter from said selected positions of rotative adjustment.

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References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
849,533	Dziedzic	Apr. 9, 1907
2,097,931	Martin	Nov. 2, 1937
2,365,415	Kruse	Dec. 19, 1944

FOREIGN PATENTS

Number	Country	Date
812,412	France	Feb. 1, 1937
47,762	France (1st addition)	Apr. 6, 1937