

July 28, 1964

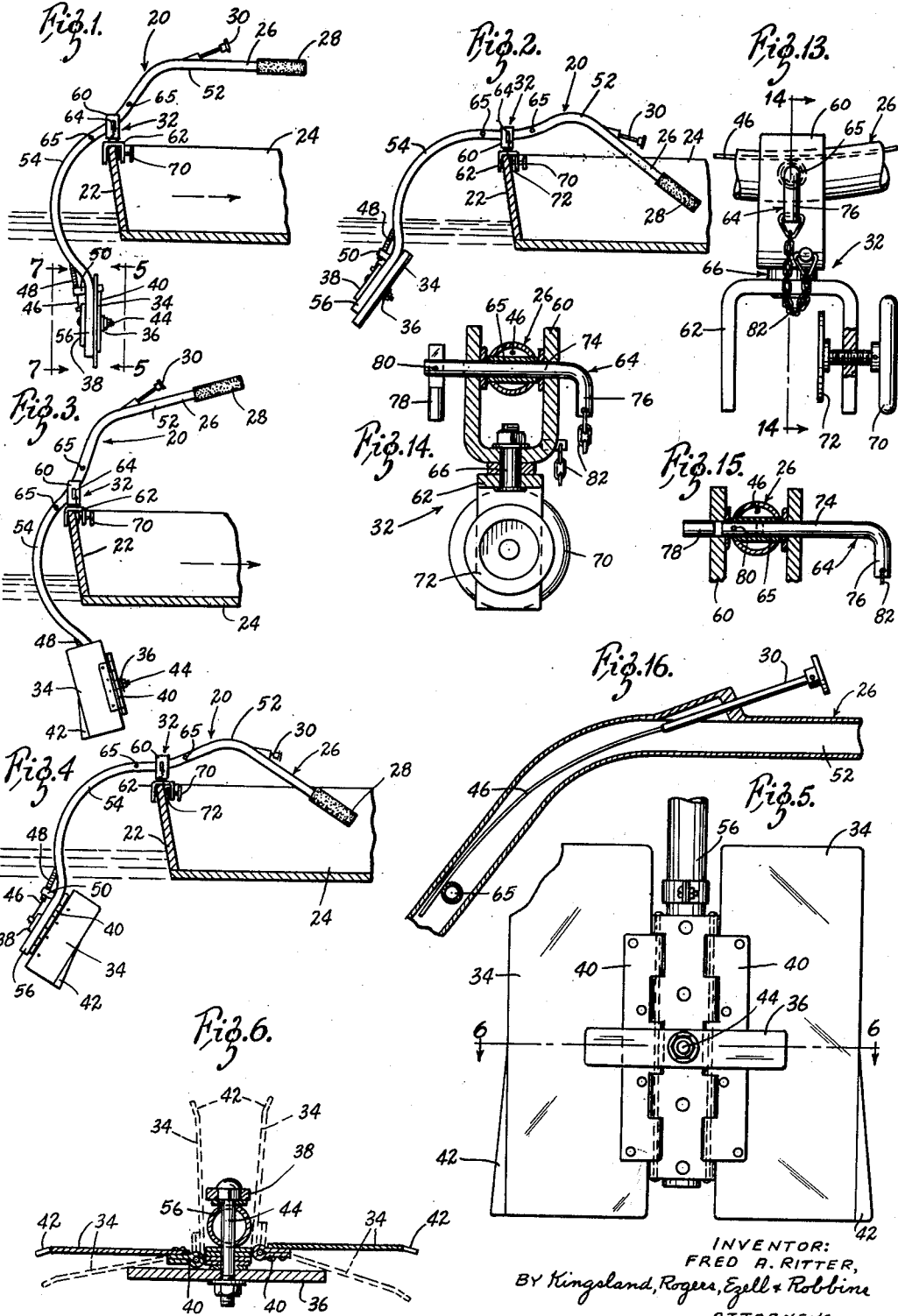
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3,142,286

REVERSIBLE ROWBOAT SWEEP

Filed Aug. 9, 1962

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

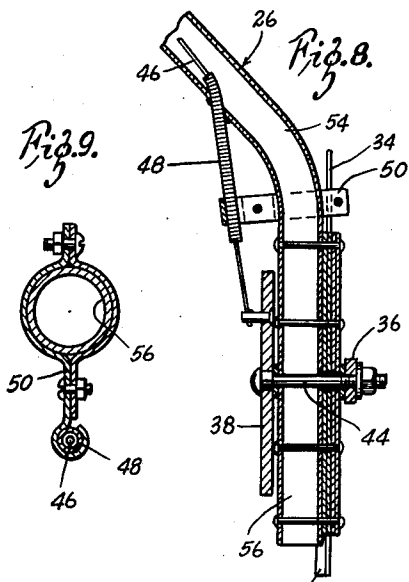
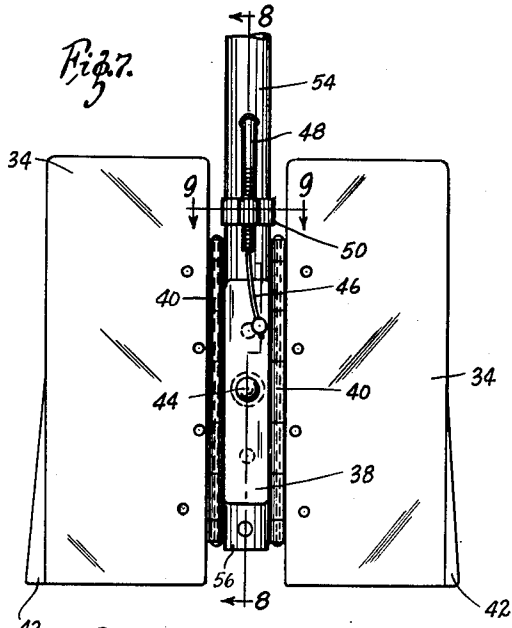
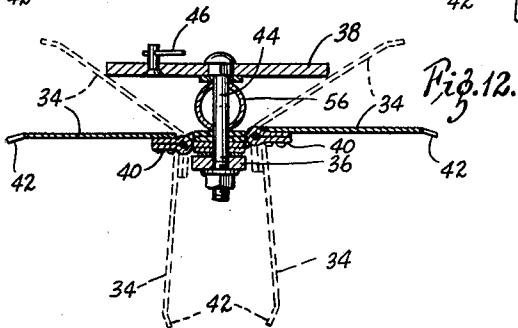
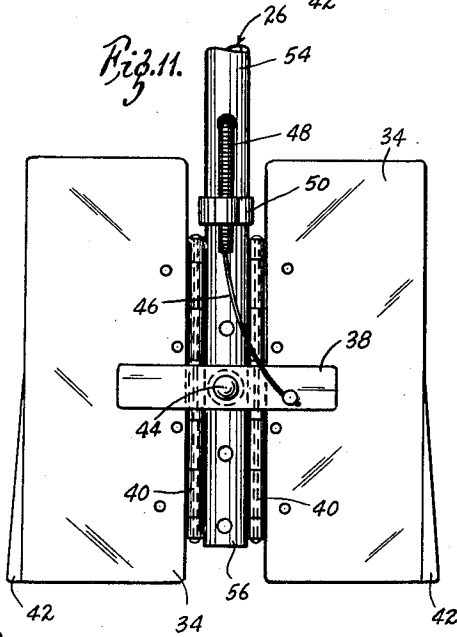
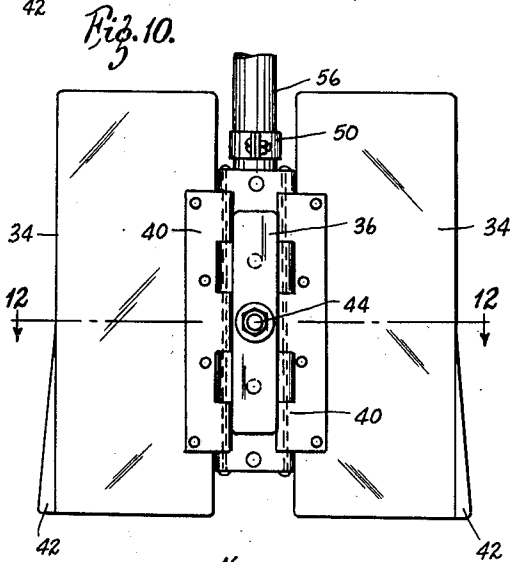
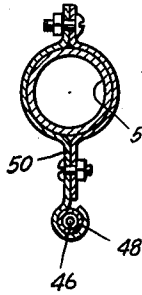


Fig. 9



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REVERSIBLE ROWBOAT SWEEP

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8 Claims. (Cl. 115-30)

This invention relates to improvements in rowboat sweeps and in particular is concerned with a rowboat sweep that has reversible paddles and which may be mounted upon a universal joint connected to the boat to serve also as an oar lock to provide for steering.

By means of this invention there has been provided a rowboat sweep which can be very simply mounted upon the transom of a boat through a universal connection or oar lock. This provides for movement of the sweep in a vertical plane to be rotated about a horizontal axis. The sweep can be oscillated back and forth about a horizontal axis with one direction serving to propel the boat, while the reverse direction of the sweep stroke serves to retract the sweep to the opposite position. The sweep has been specially designed through a double curved configuration somewhat in the shape of a streamlined M in order that the lower portion of the sweep can be moved underneath the boat in a limiting position to increase the length of the sweep stroke for fullest efficiency.

As another and very important feature of this invention, the sweep is constructed with collapsible paddles which are hinged about a vertical axis. The reversing of the sweep, so that in one position of an operating push button the sweep can be propelled forwardly and in another position it may be propelled rearwardly, is effected by a pair of keyed front and rear stop members which limit the position of the paddles. This is effected by a control wire which is moved by the push button and is connected to the stop members which are positioned 90° out of phase with one another. One of the stop members is positioned at the front of the paddles and the other at the rear so that in one position the forward stop member can block the paddles in their spread position, while in another position the rear stop member when actuated serves as a stop.

In the control operation, the sweep shaft, which is hollow, also serves to house the control wire and protect it. The entire unit is very simply constructed and can be connected to the boat transom through the universal connection or oar lock in a minimum of time by means of a specially devised locking pin which also serves as a shaft about which the sweep shaft can be rotated. The construction is simple to operate and repair, should maintenance be required, and is rugged and durable.

The above features are objects of this invention and further objects will appear in the detailed description below and will be otherwise apparent to those skilled in the art.

For the purpose of illustration, there is shown in the accompanying drawings a preferred embodiment of this invention. It is to be understood that these drawings are for the purpose of illustration only and that the invention is not limited thereto.

In the drawings:

FIGURE 1 is a view in side elevation of the rowboat sweep attached to the transom of a rowboat shown in cross section. The sweep is set for forward propulsion and the sweep is caused to propel in a clockwise direction in this position;

FIGURE 2 is a view taken similarly to FIGURE 1 but showing the sweep at substantially the completion of its propelling stroke for effecting forward movement;

FIGURE 3 is another view taken similarly to FIGURE 1 but showing the sweep being retracted through the water in a counterclockwise direction;

FIGURE 4 is another view similar to FIGURE 1 but showing the sweep control button operated to the reverse

position with the paddles collapsed at the completion of the retraction effected by movement in the clockwise direction;

FIGURE 5 is an enlarged front view taken on the line 5-5 of FIGURE 1 showing the paddle structure set for forward movement;

FIGURE 6 is a view in section taken on the line 6-6 of FIGURE 5 showing the paddle construction and the forward and rearward stop element construction;

FIGURE 7 is another enlarged view of the paddle construction taken on the line 7-7 of FIGURE 1 showing the rear of the paddle;

FIGURE 8 is a view in section taken on the line 8-8 of FIGURE 7 showing the paddle mounting structure and the stop element positions upon the bottom of the sweep shaft;

FIGURE 9 is a view in section taken on the line 9-9 of FIGURE 7 showing an operating rod mounting structure for the stop elements;

FIGURE 10 is a front view of the paddles similar to FIGURE 5 but showing the stop elements operated to a rearward position;

FIGURE 11 is a rear view of the paddles taken similarly to FIGURE 7 but showing the stop elements likewise operated to a rear position;

FIGURE 12 is a sectional view similar to FIGURE 6 but showing the operation of the paddle wheel and stop elements to a rearward position;

FIGURE 13 is a fragmentary view in side elevation showing the universal connection of the sweep to a transom lock;

FIGURE 14 is a view in section on line 14-14 at FIGURE 13 further showing this construction and the use of a lock pin which also serves as a swivel shaft;

FIGURE 15 is a sectional view taken similarly to FIGURE 14 but showing the lock pin in the process of being withdrawn; and

FIGURE 16 is a fragmentary view in vertical section of the top of the sweep shaft showing the operating rod and the handle.

The reversible sweep of this invention is generally indicated by the reference numeral 20, as shown in FIGURE 1, attached to the transom 22 of a boat 24. The main components of the sweep comprise a sweep shaft 26, a handle 28, an operating button 30, for reversing the propulsion direction, a universal mount or oar lock 32, paddles 34, and a forward stop 36, and a rearward stop element 38.

The paddle structure is best shown in FIGURES 5, 6, 7, 8, 10, 11 and 12. As there shown, the paddles 34 are connected to the bottom of the sweep shaft by a pair of hinges 40. Each of the paddles has on its outer bottom edge a flare portion 42, which facilitates the opening of the paddles from the collapsed position to the operated position as will be further described.

The forward stop 36 and the rear stop 38 are designed to be in an operative position when they are each turned to the horizontal position. They are situated with respect to one another at right angles, such that when one is in a horizontal position and operative, the other is in a vertical position and inoperative. The two stop members are keyed to a stop shaft 44, which passes through the bottom of the sweep shaft as best shown in FIGURE 6. To effect the operative movement of the shafts, they are connected to a flexible rod 46, which, in turn, is connected to the operating button 30 at the top of the sweep shaft. The flexible rod 46 passes through a tubular guide 48 as best shown in FIGURE 11, which is mounted at one end to a bracket 50 at the bottom of the shaft and from thence passes through the hollow sweep shaft, as shown in FIGURE 16, to the push-pull operating button 30.

The structure of the hollow sweep shaft is best shown

3

in FIGURES 1 through 4. As there shown, it comprises a general configuration of what might be termed a pair of concave arcs connected together with the top arc being termed the handle section 52 and the bottom arc being termed the paddle and propulsion section 54. The bottom section 54 has a further straight extension leg 56 to which the paddles are connected as previously described. Another way of describing the construction of the sweep shaft is that it has the general appearance of a streamlined or rounded M. Under either definition the mounting of the shaft at the universal joint 32 is intermediate the two sections to provide for greatest sweep efficiency. It will be noted that the lower section 54 is particularly designed so that the sweep may pass underneath the boat, as best shown in FIGURES 1 and 3, to provide for the greatest length of sweep and stroke efficiency by an operator. Likewise, the handle section 52 is so designed for maximum efficiency of an operator positioned within the boat.

The particular means for mounting this sweep to the boat is through the universal connection 32, which is best shown in FIGURES 13, 14 and 15. This universal connection is provided through two opposed yokes which are an upper yoke 60 and a lower yoke 62. The upper yoke 60 is open at the top and is provided with a locking pin 64 of special construction, which serves both as a shaft and a lock. The bottom of the yoke 60 is connected through a swivel 66 through the top of the yoke 62 so that the two yokes may pivot with respect to one another about a vertical axis on the pivot 66. The sweep may likewise pivot about the horizontal axis of the lock 64 so that universal movement may be effected. The yoke 62 is adapted to be fastened to the transom wall of a boat through a transom lock screw 70 fitting in threaded relation through a threaded hole in the yoke wall and attached to a screw plate 72, which can be brought up tight against the transom wall.

The lock pin 64 fits through any one of a plurality of openings 65 in the sweep shaft 26 as best shown in FIGURES 14 and 15. As there shown, it has a shaft portion 74, a handle portion 76, and a pivoted lock section 78. The lock section, as shown in FIGURE 14, is in the locking position, while in FIGURE 15 it is shown pivoted about a pivot pin 80 to be brought in line with the shaft section 74 in which position it may be withdrawn through the yoke 60. A chain 82 connects the lock pin to the yoke to prevent its loss.

Operation

The reversible sweep of this invention is very simply attached to a boat by merely fitting the yoke 62 over the top edge of the boat transom 22 and tightening the screw handle 70. Once this is effected, the sweep shaft may be attached to the universal joint 32 and the top yoke 60 by fitting the lock pin through the yoke and shaft openings in alignment insuring that the lock section 78 is in line with the lock pin shaft. Once the lock pin is inserted, the sweep is ready for use. It will be understood that this connection and disconnection can be effected in a matter of seconds, making the unit very simple to install and remove.

For forward movement of the boat, the operating button 30 is withdrawn to the position shown in FIGURE 1. This withdraws the flexible rod 46 and causes the rear stop member 38 to be moved to the vertical position as shown in FIGURES 1 and 7. Because the front stop member 36 is keyed to the rear stop member 38 through the shaft 44, the front stop member is correspondingly turned to the horizontal position. This is because the relationship of the two stop members is maintained at 90° with respect to one another by means of the keyed shaft connecting the two.

With the forward stop member 36 operated to the horizontal position, the sweep is in a position to be operated. For forward propulsion, it is moved in the clockwise direction as shown in FIGURE 1 from a position just

4

underneath the bottom of the boat to a position where the paddles are close to the surface of the water. In this movement the paddles open to a spread position and are stopped in their movement by the stop member 36 as shown in FIGURE 1. In this operation the steering of the boat can also be effected by moving the sweep shaft about the vertical axis of the universal connection, that is, about the vertical axis of the pivot 66. Thus, steering may be effected just as in an ordinary tiller, while, at the same time, effecting the forward movement through the paddle action.

In the sweep action it will further be noted that the bowed section 54 of the sweep shaft is so constructed that the paddles can get the fullest sweep through the water. Thus, the bowed section is designed in order that it may fit substantially around and underneath the transom as best shown in FIGURE 3. This permits a long and effective sweep in each stroke of the sweep.

The limiting action of the operating forward stroke is shown in FIGURE 2. The return of the sweep through the water is then shown in FIGURE 3 where it will be appreciated that the sweep is moved in a counterclockwise direction about the universal joint. In this return, the paddles 34 collapse and move together as shown in FIGURE 3, to provide a minimum of water resistance as they pass through the water. FIGURE 6 shows the completion of the retraction of the paddles in the dotted line position of the paddles at the top of the figure where the paddles are parallel to one another. In this position the flared tips 42 insure that the paddles can be rapidly moved to the operative position as the sweep is then moved to the operative stroke. Thus, the tips 42 catch the water and cause the paddles to be rapidly spread apart to the position of the paddles shown in full bodied lines in FIGURE 6 when the operative stroke is again repeated by moving the sweep in the clockwise direction shown in FIGURE 1.

The reverse operation of the sweep to effect movement of the boat in a rearward direction is simply effected by closing or pushing in the operating button 30. This position is shown in FIGURE 4. By this action the operating wire 46 will be moved downwardly and will cause the rear stop member 38 to move to the horizontal position shown in FIGURE 11. Because the forward stop member 36 is keyed to the shaft connecting the two stop members, it concomitantly moves to the vertical direction. In this position of the stop members, and as shown in FIGURE 4, the clockwise movement of the sweep through the water retracts the paddles to the collapsed position. As the stroke reaches its limit shown substantially in FIGURE 4, the sweep is reversed. As the sweep is reversed, the paddles which are spread further apart in their reverse position, so as to be slightly diverging, catch the water and are spread apart to the position shown in FIGURE 12. Then the movement of the sweep in the counterclockwise direction causes the paddles to catch the water as they are spread apart and the boat is moved rearwardly until the limit of the sweep stroke is reached when the paddles are underneath the boat. The retracting stroke then is effected by moving the sweep clockwise and the paddles will collapse together as they are drawn through the water.

When the sweep is desired to be moved from the universal joint, which also acts as an oar lock, the locking pin 64 is removed. This is effected by moving the lock element 78 from the position shown in FIGURE 14 to the position shown in FIGURE 15 and then removing the pin from the openings in the top yoke 66 and the sweep shaft. The pin is retained through the action of the chain. Once this has been effected, the entire sweep can be bodily removed. The universal joint or oar lock can be kept on the boat transom, or, in turn, it may be removed by merely loosening the screw handle 70 and withdrawing the unit from the boat transom.

Various changes and modifications may be to the struc-

ture of this invention as will be readily apparent to those skilled in the art. Such changes and modifications are within the scope and teaching of this invention as defined by the claims appended hereto.

What is claimed is:

1. A reversible boat sweep comprising a sweep shaft having a handle at one end and a pair of collapsible paddles hingedly mounted about a vertical axis of the shaft at the other end, said paddles being movable through their hinged mounting about the vertical axis of said shaft, said sweep having means for mounting it upon the end of a boat and means for reversing the sweep propulsion comprising front and rear elongated stop members rigidly connected to one another and alternately engageable with the paddle members to determine the direction in which force will be applied to the boat and means for engaging alternately the front and rear stop members in blocking relation with said paddles to limit their movement about said shaft, said means comprising a semi-rigid control wire connected to the stop members at one end and a manually engageable control button at the other end operable by a pushing and pulling action to control the movement of said stop members.
2. A reversible boat sweep comprising a sweep shaft having a handle at one end and a pair of collapsible paddles hingedly mounted about a vertical axis of the shaft at the other end, said paddles being movable through their hinged mounting about the vertical axis of said shaft, said sweep having means for mounting it upon the end of a boat, said means comprising a universal connection, and means for reversing the sweep propulsion comprising front and rear elongated stop members rigidly connected to one another and alternately engageable with the paddle members to determine the direction in which force will be applied to the boat and means for engaging alternately the front and rear stop members in blocking relation with said paddles to limit their movement about said shaft, said means comprising a semi-rigid control wire connected to the stop members at one end and a manually engageable control button at the other end operable by a pushing and pulling action to control the movement of said stop members.
3. A reversible boat sweep comprising a sweep shaft having a handle at one end and a pair of collapsible paddles hingedly mounted about a vertical axis of the shaft at the other end, said paddles being movable through their hinged mounting about the vertical axis of said shaft, said sweep having means for mounting it upon the end of a boat, said means comprising a universal connection consisting of a top yoke pivotally connected to a bottom yoke, said top yoke having a horizontal shaft passing through it and the sweep shaft and said bottom yoke having an adjustment screw whereby it may be connected to a transom wall of a boat, and means for reversing the sweep propulsion comprising front and rear elongated stop members rigidly connected to one another and alternately engageable with the paddle members to determine the direction in which force will be applied to the boat and means for engaging alternately the front and rear stop members in blocking relation with said paddles to limit their movement about said shaft, said means comprising a semi-rigid control wire connected to the stop members at one end and a manually engageable control button at the other end operable by a pushing and pulling action to control the movement of said stop members.
4. A reversible boat sweep comprising a sweep shaft having a handle at one end and a pair of collapsible paddles hingedly mounted about a vertical axis of the shaft at the other end, said paddles being movable through their hinged mounting about the vertical axis of said shaft, said sweep having means for mounting it upon the end of a boat and means for reversing the sweep propulsion comprising front and rear elongated stop members rigidly connected to one another and alternately

- engageable with the paddle members to determine the direction in which force will be applied to the boat and means for engaging alternately the front and rear stop members in blocking relation with said paddles to limit their movement about said shaft, said paddle members being hinged about a vertical axis at the lower end of the sweep shaft and said stop members being pivotally fastened to the sweep shaft 90° out of phase with one another, said front stop member being mounted forwardly of the collapsible paddle hinge and serving to block the forward collapsing of the paddles, and said rear stop member being mounted rearwardly of the collapsible paddle hinge and serving to block the rearward collapsing of the paddles, said means comprising a semi-rigid control wire connected to the stop members at one end and a manually engageable control button at the other end operable by a pushing and pulling action to control the movement of said stop members.
5. A reversible boat sweep comprising a sweep shaft having a handle at one end and a pair of collapsible paddles hingedly mounted about a vertical axis of the shaft at the other end, said paddles being movable through their hinged mounting about the vertical axis of said shaft, said sweep having means for mounting it upon the end of a boat and means for reversing the sweep propulsion comprising front and rear elongated stop members rigidly connected to one another and alternately engageable with the paddle members to determine the direction in which force will be applied to the boat and means for engaging alternately the front and rear stop members in blocking relation with said paddles to limit their movement about said shaft, said means comprising a semi-rigid control wire connected to the stop members at one end and a manually engageable control button at the other end operable by a pushing and pulling action to control the movement of said stop members.
 6. A reversible boat sweep comprising a sweep shaft having a handle at one end and a pair of collapsible paddles hingedly mounted about a vertical axis of the shaft at the other end, said paddles being movable through their hinged mounting about the vertical axis of said shaft, said sweep having means for mounting it upon the end of a boat and means for reversing the sweep propulsion comprising front and rear elongated stop members rigidly connected to one another and alternately engageable with the paddle members to determine the direction in which force will be applied to the boat, said paddle members being hinged about a vertical axis at the lower end of the sweep shaft and said stop members being pivotally fastened to the sweep shaft 90° out of phase with one another, said front stop member being mounted forwardly of the collapsible paddle hinge and serving to block the forward collapsing of the paddles and said rear stop member being mounted rearwardly of the collapsible paddle hinge and serving to block the rearward collapsing of the paddles, and means for operating the stop members to pivot them 90°, said means comprising a semi-rigid control wire connected to the stop members at one end and a manually engageable control button at the other end operable by a pushing and pulling action to control the movement of said stop members.
 7. A reversible boat sweep comprising a sweep shaft having a handle at one end and a pair of collapsible paddles hingedly mounted about a vertical axis of the shaft at the other end, said paddles being movable through their hinged mounting about the vertical axis of said shaft, said sweep having means for mounting it upon the end of a boat and means for reversing the sweep propulsion comprising front and rear elongated stop members rigidly connected to one another and alternately engageable with the paddle members to determine the direction in which force will be applied to the boat, said paddle members being hinged about a vertical axis at the lower end of the sweep shaft and said stop members

being pivotally fastened to the sweep shaft 90° out of phase with one another, said front stop member being mounted on the sweep shaft in front of the paddles and being rotatable to a non-blocking vertical position and a paddle blocking horizontal position and said rear stop member being mounted to the rear of the paddles and being rotatable to a non-blocking vertical position and a paddle blocking horizontal position, and means for operating the stop members, said means comprising a semi-rigid control wire connected to the stop members at one end and a manually engageable control button at the other end operable by a pushing and pulling action to control the movement of said stop members, said sweep shaft being hollow and said control wire passing there-through through a major portion of its length intermediate its end to be protected thereby.

8. A reversible boat sweep comprising a sweep shaft having a handle at one end and a pair of collapsible paddles hingedly mounted about a vertical axis of the shaft at the other end, said paddles being movable through their hinged mounting about the vertical axis of said shaft, said sweep shaft having a lower concavely bowed portion, said bowed portion fitting around the boat transom and underneath the bottom of the boat, said sweep having means for mounting it upon the end of a boat, said means comprising a universal connection connecting the sweep to a transom wall of a boat, and means for

reversing the sweep propulsion comprising front and rear elongated stop members rigidly connected to one another and alternately engageable with the paddle members to determine the direction in which force will be applied to the boat, and means for engaging alternately the front and rear stop members in blocking relation with said paddles to limit their movement about said shaft, said paddle members being hinged about a vertical axis at the lower end of the sweep shaft, said front stop member being mounted forwardly of the collapsible paddle hinge and serving to block the forward collapsing of the paddles and said rear stop member being mounted rearwardly of the collapsible paddle hinge and serving to block the rearward collapsing of the paddles, and means for operating the stop members comprising a semi-rigid control wire connected at one end to one of the stop members and to a manually engageable control button at the other end operable by a reversing action to control the movement of said stop members.

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