Oct. 6, 1931. R. T. CROSBY 1,826,507

PROPELLING MEANS FOR BOATS AND THE LIKE

Filed May 27, 1931 3 Sheets-Sheet 1

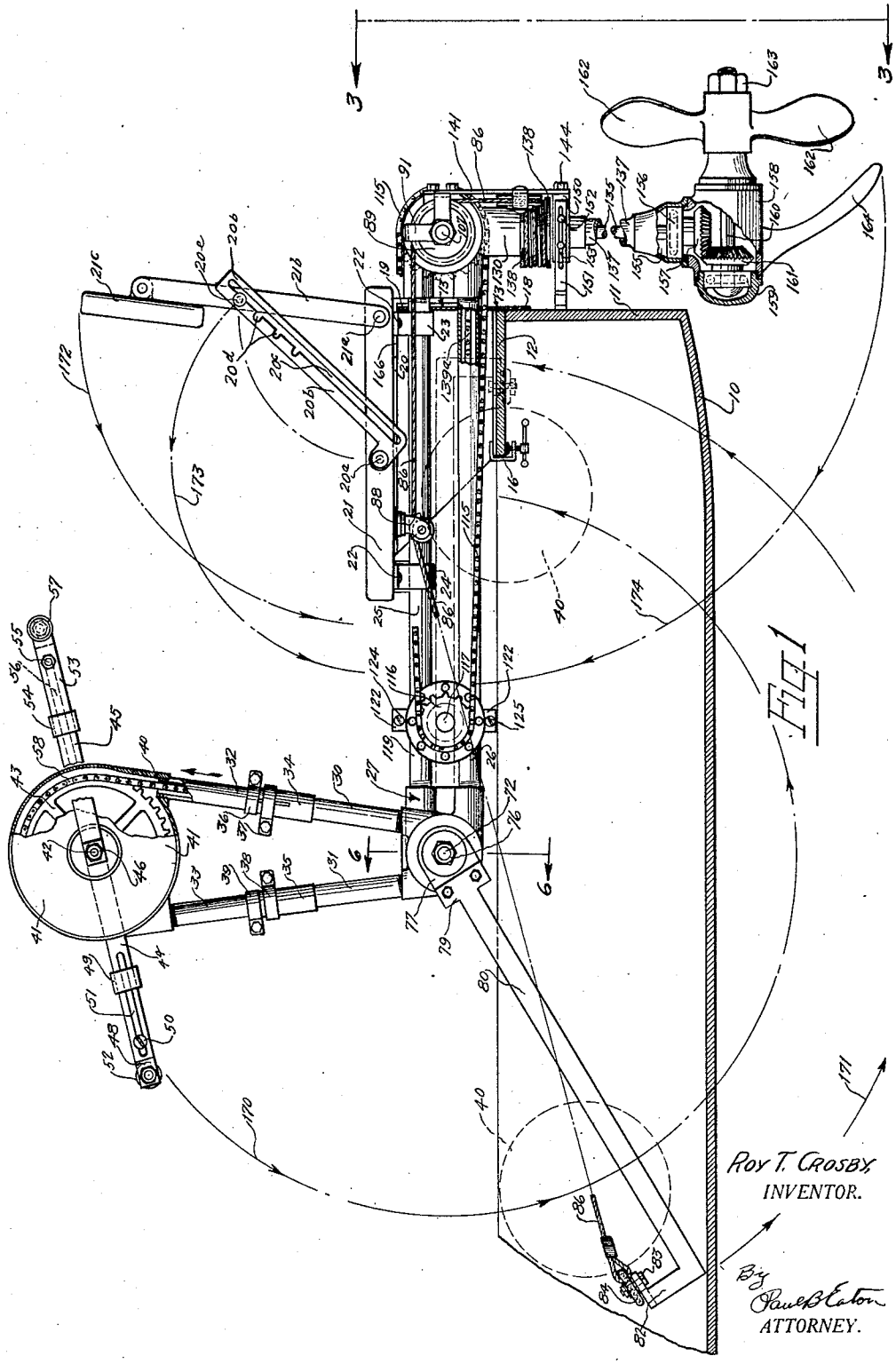


FIG 1

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Filed May 27, 1931 3 Sheets-Sheet 2

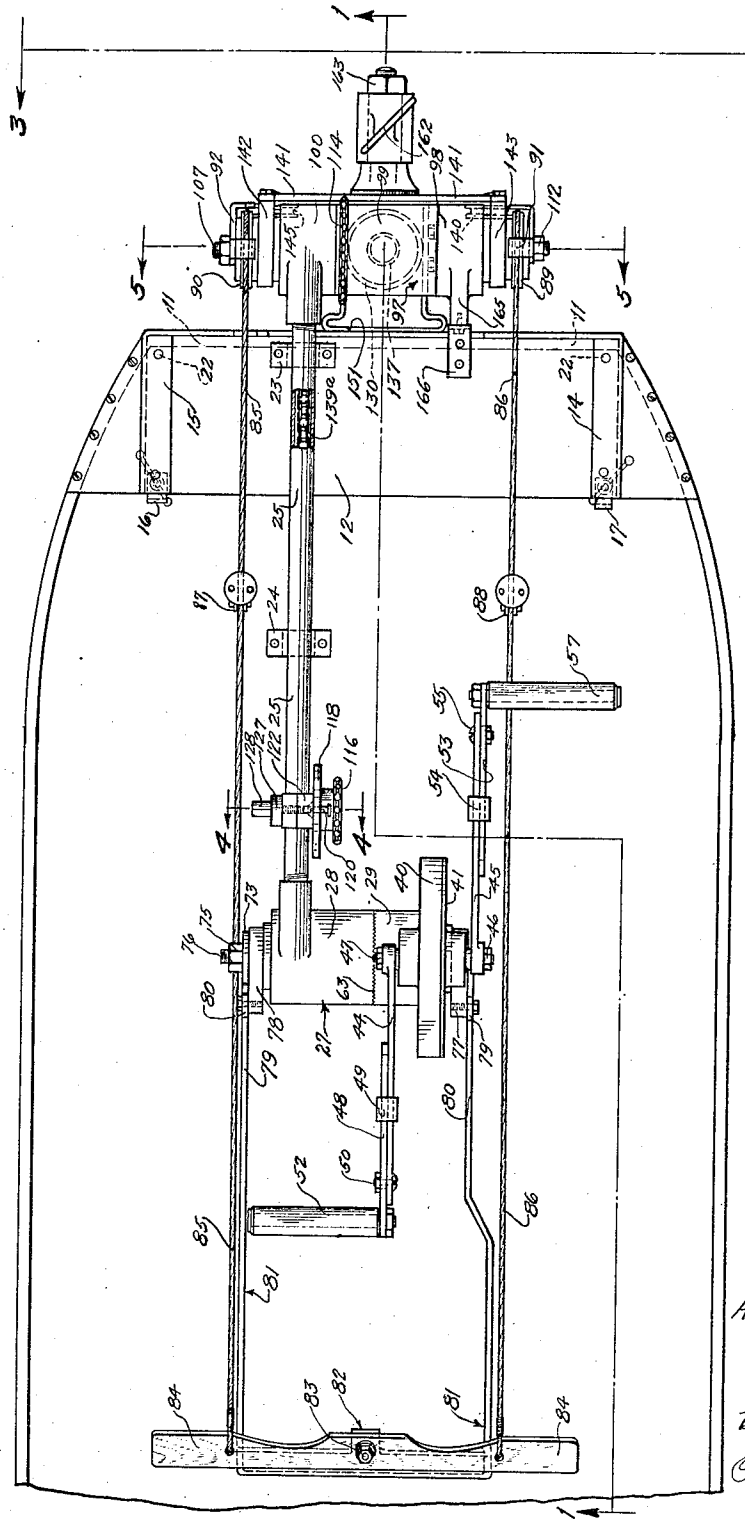


FIG 2

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PROPELLING MEANS FOR BOATS AND THE LIKE

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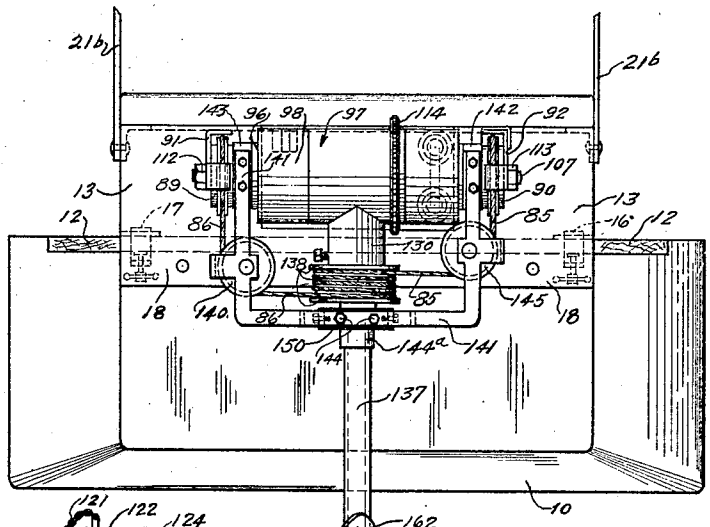


Fig 3

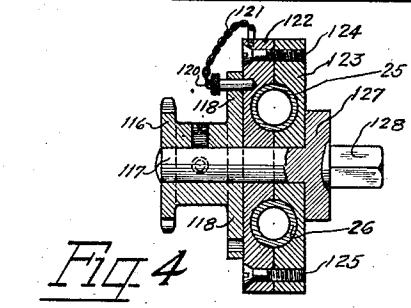


Fig 4

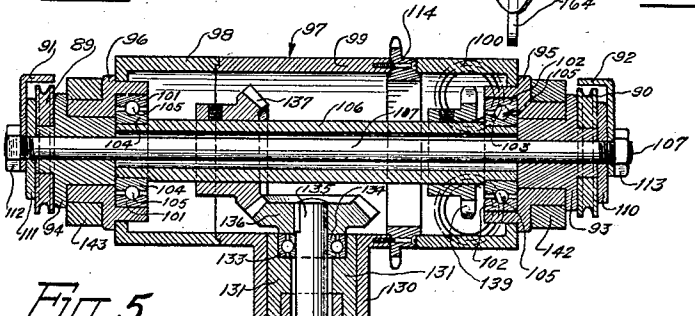


Fig 5

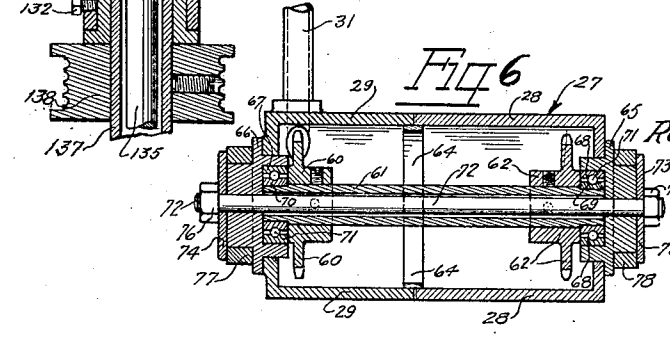


Fig 6

ROY T. CROSBY, INVENTOR.

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Patented Oct. 6, 1931 1,826,507

UNITED STATES PATENT OFFICE

ROY T. CROSBY, OF GREENVILLE, SOUTH CAROLINA

PROPELLING MEANS FOR BOATS AND THE LIKE

Application filed May 27, 1931. Serial No. 540,323.

This invention relates to a propelling attachment adapted to be secured to the stern of a boat without the necessity of any changes whatever being made in the boat and without piercing the bottom or rear end thereof and also the invention provides a propelling unit which can be quickly attached to a boat and when not desired to be left on the boat can be quickly detached therefrom and can be folded into a very small space and is thus rendered portable to the highest degree.

Another object of this invention is to provide a propelling unit adapted to be attached to the stern of a boat without making any changes whatever in the boat and also providing a unit having a seat and a back therefor and integral therewith, together with steering mechanism all self-contained within the unit thus enabling the operator to face forwardly and thus be able to ascertain the direction being traveled by the boat for propelling and steering the same.

I am aware that heretofore, various devices have been provided in which the operator sits with his back to the front of the boat, facing backward and thus is handicapped in not being able to properly see ahead of the boat for proper steering, but in this invention, there is provided a structure which is easily attachable to a boat and which can be propelled and manipulated while the occupant of the boat is facing forward therein.

Another object of this invention is to provide a propelling unit adapted to be propelled by hand or motor which unit is foldable and can be stored in a very small space for transportation purposes and in which means are provided for seating the occupant of the boat in such a manner that he will face forwardly in the boat, and in the hand-operated embodiment of the invention, can propel the boat and steer the same simultaneously and also the unit is provided with means whereby the mechanism may be thrown into reverse operation without the necessity of changing direction of motion of the propelling part of the device as means are provided whereby the steering apparatus can be so manipulated as to completely reverse the pull of the propeller to throw the mechanism into reverse without the necessity of changing the direction of rotation of the various parts of the mechanism.

Some of the objects of the invention having been stated, other objects will appear as the description proceeds when taken in connection with the accompanying drawings, in which—

Figure 1 is a side elevation of the unit showing the same attached to a boat and showing the boat in cross-section;

Figure 2 is a plan view of the unit attached to the stern of a boat;

Figure 3 is a rear view of the rear portion of the unit;

Figure 4 is a cross sectional view taken along the line 4—4 in Figure 2, omitting the sprocket chain;

Figure 5 is a cross sectional view taken along the line 5—5 in Figure 2, omitting the sprocket chain;

Figure 6 is a cross sectional view taken along the line 6—6 in Figure 1, omitting the two sprocket chains.

A shaft 72 penetrates tube 61 and members 65 and 66 and have washers 73 and 74 thereon with nuts 75 and 76 on the respective ends of shaft 72 for holding the housing 27 and the parts therein in assembled condition. Surrounding the outer portion of members 65 and 66 are the members 77 and 78 which members have secured thereto the ends 79 and 80 of a U-shaped member 81 which U-shaped member 81 has the upwardly projecting closed end 82 in which a bolt 83 is mounted and on which a treadle 84 is pivotally mounted to serve as a steering apparatus for the propeller, said treadle having cords 85 and 86 secured thereto which pass through sheaves 87 and 88 secured on the lower side of seat member 21 and to the rear of the unit where they pass over sheaves 89 and 90 which sheaves have guards 91 and 92 therefor. Sheaves 89 and 90 are rotatably secured on members 93 and 94 which are rotatably mounted in members 95 and 96 which members 95 and 96 form closure means for the ends of housing 97 which housing is made up of sections 98, 99 and 100 joined together in the same manner as explained for housing 27. Members 95 and 96 have fixedly se-

cured therein race rings 101 and 102 and within these race rings other race rings 103 and 104 have rotation with balls 105 therebetween, said race rings 103 and 104 being fixedly secured on a tube 106. A shaft 107 loosely penetrates tube 106 and projects thru members 93 and 94 and also thru members 110 and 111 and thru guards 91 and 92 and has nuts 112 and 113 on the respective ends thereof thus forming a unit which is held together and in which certain parts are allowed movement with respect to each other.

Referring more specifically to the drawings, the numeral 10 indicates a portion of a boat which has a stern, indicated by reference character 11 and a rear seat indicated by reference character 12. It is to such a boat that my unit is applicable, although it is evident that the base member of my unit may be varied as to shape to fit other structures of boats should the same be necessary. In the embodiment of my invention, I provide a plate 13 having arms 14 and 15 which are adapted to lie flush against the top of seat portion 12 and to be secured thereto by any suitable means such as clamps 16 and 17. Plate 13 has a downwardly projecting portion 18 adapted to fit against the outer surface of stern 11 and an upwardly projecting portion 19, and immediately above portion 19, a flat portion 20 extends forwardly for supporting a cushioned seat 21 which is secured by any suitable means such as screws or bolts 22. Brackets 23 and 24 are secured to the lower side of seat 21 and support a pipe 25 which pipe has a companion pipe 26 which has secured to the forward end thereof a housing 27 and with the interior of which pipes 25 and 26 communicate. This housing is formed of portions 28 and 29, and projecting from the upper portion of portion 29 are pipes 30 and 31 which communicate with the interior of housing 27 and adjustably secured to the upper ends of pipes 30 and 31 are pipes 32 and 33 which are adjustably secured by means of split tubes 34 and 35 being secured in position by means of clamps 36, 37, 38 and 39, clamps 37 and 38 contracting the tubes 34 and 35, and clamps 36 and 39 preventing pipes 32 and 33 from sliding downward any further than the point of adjustment.

Pivotally secured as at 21*a* on each side of seat portion 21 are the uprights 21*b* which have pivotally secured at the upper end thereof the transverse back rest 21*c* and pivotally secured on each side of seat member 21 as at 20*a* are the members 20*b* each of which has a slot 20*c* therein with notches 20*d* adapted to engage a pin 20*e* on each of the members 21*b* adjusting the angularity of the back rest. This arrangement also allows the back rest 21*c* to fold down against seat 21 when the structure is folded for transportation.

To the upper end of pipes 32 and 33 is secured a housing 40 and with the interior of which pipes 32 and 33 communicate. This housing has a lid 41 fitting over one side and thereinto by means of a pressed fit. In this housing a transverse shaft 42 is mounted on which is fixedly secured a sprocket wheel 43, and on the outer ends of this shaft 42 are secured arms 44 and 45, there being nuts 46 and 47 on both ends of shaft 42 for containing the unit in proper position. Arm 44 has a member 48 adjustably secured thereon by means of a collar 49 and a bolt 50 penetrating member 48 and being adjustably mounted in slots 51 in member 44. On the end of member 48 a suitable handle 52 is mounted.

Arm 45 has a similar arrangement on the end thereof comprising a member 53 and collar 54 and bolt 55, the slot being indicated by the reference character 56 in Figure 1. On the end of member 53 a handle 57 is secured.

Mounted on sprocket wheel 43 is an endless sprocket chain 58 which is also mounted on a sprocket wheel 60 fixedly secured on a tube 61 rotatably mounted in housing 27. This tube also has a sprocket wheel 62 fixedly secured thereon.

Portions 28 and 29 of housing 27 have their proximate edges serrated as indicated along line 63 in Figure 2, and portion 29 has an inner pojection 64 over which portion 28 snugly fits to form a reinforced junction point for the two portions of the housing. Secured in the closed outer ends of portions 27 and 29 of housing 28 are members 65 and 66 containing fixed race rings 67 and 68, and race rings 69 and 70 are fixedly secured on the ends of tube 61, said race rings having balls 71 therebetween.

Housing 97 has projecting from the outer surface thereof a sprocket wheel 114 on which is mounted an endless sprocket chain 115 which sprocket chain is mounted also on a sprocket wheel 116 which is fixedly secured on a shaft 117 which sprocket wheel 116 has a circular flange 118 integral therewith which flange has a plurality of holes 119 therein in which a removable pin 120 secured by a flexible member 121 to portion 122 which portion 122 has secured thereto another portion 123 by means of screws 124 and 125, the two portions 122 and 123 being secured on opposite sides of pipes 25 and 26. Shaft 117 has a flange 127 on the other end thereof from sprocket wheel 116 which has one surface thereof in rotative engagement with the outer surface of member 123. This shaft 117 also has a squared portion 128 thereon on which a suitable ratchet wrench can be removably secured for imparting rotation to sprocket wheel 116 when pin 120 is removed to give rotation to housing 97 to raise the propeller out of the water when desired, the operation of which will be presently described.

Projecting from the lower side of housing 97 is a portion 130 which has adjustably se-

cured therein a hollow member 131 by means of set screw 132 which member 131 has fixedly secured therein a race ring 133 which forms a thrust bearing with race ring 134 which is fixedly secured on shaft 135 which shaft has a pinion or bevel gear 136 which meshes with pinion or bevel gear 137 fixedly secured on tubular member 106. Rotatably secured in member 131 is a tube 137 which houses shaft 135. Secured on tube 137 is a sheave 138 on which cable 86 is wound several times thereabout after passing over sheave 89 and sheave 140 which sheave 140 is mounted in a U-shaped bracket 141 which is secured at its upper end to members 142 and 143 surrounding members 95 and 96, and this U-shaped bracket is secured to tube 137 as at 144*a* and also has a sheave 145 on the other leg thereof and cable 86 after passing thru sheave 140 and over sheave 138 passes over sheave 145 and over sheave 90 back to the other side of treadle 84, the latter of cable 86 being indicated in Figure 2 by the reference character 85.

Fixedly secured on tube 106 is a sprocket 139. An endless chain 139*a* connects sprocket 139 with sprocket 62.

Housing 97 has a lug 165 integral therewith which has an upwardly and laterally projecting portion 166 which is secured to the lower side of seat portion 21 thus forming an integral structure between bracket 19, seat portion 21, housing 97 and tubes 25 and 26.

Loosely secured on tube 137 is member 150 to which member 141 is secured as at 144 and to this member 150 is adjustably secured the ends of a U-shaped member 151 by means of stud bolts 152 being embedded in member 150 and penetrating a slot 153 in the end portions of member 151. This member 151 can be adjusted with relation to member 150 so as to cause its closed end to set against the stern end of the boat to support the portion of the mechanism disposed downwardly at the rear of the boat. Tube 137 flares outwardly at the lower end thereof as at 155 and has a bearing 156 similar to the thrust bearings shown in the other portions of the drawings in which bearing the lower end of shaft 135 is rotatably mounted, and on the lower end of this shaft a pinion 157 is secured. Secured in a threadable manner or any other suitable means in the lower end of portion 155 is a housing 158 which has bearing 159 in each end thereof, only one bearing being shown in Figure 1, but the other bearing being identical, and in these bearings a propeller shaft 160 is rotatably mounted. On this propeller shaft a pinion 161 is fixedly mounted which meshes with pinion 157 on shaft 135. The shaft 160 projects rearwardly out of housing 158 and has a propeller 162 secured thereon by any suitable means such as a nut 163. Housing 158 has a pin 164 projecting downwardly therefrom to serve as a guard for the propeller while the boat is moving forward.

When the device is not desired to be used, but is to be transported by the owner after being removed from the boat, the pipes 30 and 31 supporting housing 40 can be folded along the line 170 to a position beneath pipe 26, and adapted to fold in front of pipes 31 and 30 is the U-shaped member 80 which can be folded until the portion 82 rests against pipe 26, and then the housing 40 and the pipe supporting the same will be folded along the line 170 after member 80 has been folded along the line 171. Back rest 21*c* will be folded along the line 172 and the bracket 20*b* will be folded along the line 173. The propeller will be folded along line 174 and by passing a suitable strap or other confining means around the unit in folded condition it is seen that it can easily be transported from place to place. It is seen that housing 40 will occupy the dotted line position indicated by reference character 40 with a dotted lead line thereto in Figure 1 when in folded condition, and the other parts will likewise be folded as above described.

In the drawings and specification, there has been set forth a preferred embodiment of the invention and although specific terms are employed, they are used in a generic and descriptive sense only and not for purposes of limitation, the scope of the invention being set forth in the appended claims.

Claims:

1. A portable propelling device for small water craft comprising a bracket and means for removably securing the same to the stern of the craft, a longitudinally disposed portion, a vertically disposed portion pivotally secured to the front end of the longitudinal portion, a second vertically disposed portion pivotally secured to the rear end of the longitudinal portion, a propeller on the lower portion of the last vertical portion, driving means on the upper end of the first vertical portion, driving connections between the driving means and the propeller extending within the longitudinal and two vertical portions and connections between all of said portions permitting folding of the vertical portions into parallel relation with the longitudinal portion.

2. Manual propelling means for a boat comprising a bracket having means for detachably securing the same to the stern of the boat, a housing on said bracket, two longitudinally disposed pipes connected to said housing, a housing connected to the other end of said pipes, transversely disposed tubular members mounted in said housing, sprocket wheels on both of said shafts, a sprocket chain mounted in said tubular members and mounted on said sprocket wheels, two vertically extending tubes mounted on the last housing and having a housing secured to the

upper end of said last tubes, a second sprocket wheel on the housing on the lower end of said vertically disposed tubes, a sprocket chain mounted on said sprocket wheel in said upper housing and said lower housing, propelling cranks associated with said last sprocket wheel, a vertically disposed shaft associated with the housing on the rear of the two horizontally disposed tubes, a propeller shaft connected to said vertically disposed shaft, a propeller on said shaft, a seat member secured on said bracket and to one of said longitudinally disposed tubes, means for turning the vertically disposed shaft, for steering purposes, said housings permitting the folding of the parts into parallel relation to each other.

3. In a propelling device for a boat, a horizontally disposed portion, means for attaching the horizontally disposed portion to the stern of a boat, a vertically disposed portion having driving means thereon, a vertically disposed portion extending downwardly from the rear of the boat and having a driving shaft therein, a propeller shaft connected to the lower end of said driving shaft and having a propeller thereon, connections between the driving means and said propeller shaft, steering means, the driving means, steering means, and propeller shaft, being foldable with relation to the horizontally disposed portion.

4. In a manually operated propelling device for boats and the like, a bracket for securing the same to a boat, a longitudinally disposed set of pipes having a sprocket chain therein, a housing on the front end of said pipes, a set of tubes connected to said housing and extending upwardly and having a housing thereon, a sprocket wheel in said upper housing, a sprocket chain on said sprocket wheel and extending thru said upwardly extending tubes, a sprocket wheel in the housing on the front end of said longitudinally disposed tubes on which said second sprocket chain is mounted, a housing on the rear end of said longitudinally disposed tubes having a transversely disposed shaft with the sprocket wheel thereon on which the sprocket chain in said longitudinally disposed tubes is mounted, a vertically disposed propeller shaft mounted pivotally with relation to the rear housing, means for turning the propeller shaft for guiding movement, the propeller shaft and vertically disposed tubes and steering means being foldable with relation to the longitudinally disposed portion.

5. In a manually operated propelling device for boats, two longitudinally disposed tubes having a sprocket chain therein, a rear housing and a front housing secured to said tubes, transversely disposed rotatable members in said housing, vertically disposed tubes secured to the front housing and extending upwardly and having an upper housing secured to the other end thereof, a sprocket wheel in said upper housing, a second sprocket wheel mounted on the rotatable member in the front housing, said sprocket in the upper housing and the lower housing being adapted to receive a sprocket chain, a bevel gear mounted on the rotatable member in the rear housing having engagement with a bevel gear mounted on the upper end of a vertically disposed shaft, a propeller shaft mounted on the lower end of the propeller operating shaft, gearing means pivotally secured to the front housing, the upper housing and the gearing means being foldable with relation to the horizontally disposed tubes.

6. In a manually operated propelling unit for boats, means for removably attaching the same to the stern of a boat, a longitudinally disposed sprocket chain, a sprocket at each end of the sprocket chain, a casing for said sprocket chain and sprockets, a vertically disposed sprocket chain having operable engagement with the front end of the longitudinally disposed sprocket chain, means for driving the vertically disposed sprocket chain, a vertically disposed tubular member mounted at the rear end of the longitudinally disposed sprocket chain, a rotatable shaft mounted in said tubular member and having operative engagement with the longitudinally disposed sprocket chain, a propeller having operative engagement with said vertically disposed shaft, the connections between the two sprocket chain casings and the vertically disposed tubular member permitting foldability of the sprocket chains in their casings and the vertically disposed tubular member into parallel relation.

7. In a manually operated propelling unit for boats and the like, a longitudinally disposed propeller shaft having a propeller thereon, a vertically disposed shaft having engagement with the propeller shaft, a longitudinally disposed sprocket chain having engagement with said vertically disposed shaft, a vertically disposed sprocket chain having engagement with the longitudinally disposed sprocket chain, pivotal mountings between the vertically disposed sprocket chain and the longitudinally disposed sprocket chain, pivotal mountings between the longitudinally disposed sprocket chain and the vertically disposed shaft, a seat member secured on the casing for the longitudinally disposed sprocket chain and having a folding back member attached thereto, the pivotal points between the sprocket chains and their casings, and the vertically disposed shaft being such as to permit folding of the sprocket chains and the vertically disposed shaft and the back rest for the seat portion into parallel relation to each other.

8. In a manually propelled unit for boats and the like, a seat member associated with

said unit so disposed as to permit the occupant to face the front of the boat while propelling the unit, steering means adapted to be operated by the foot of the occupant of the seat, the elements of the unit being foldable into parallel relation to each other.

In testimony whereof I affix my signature.

ROY T. CROSBY.