

W. CUTLER.
 BOAT PROPELLING MEANS.
 APPLICATION FILED MAR. 2, 1908.

954,718.

Patented Apr. 12, 1910.

3 SHEETS—SHEET 1.

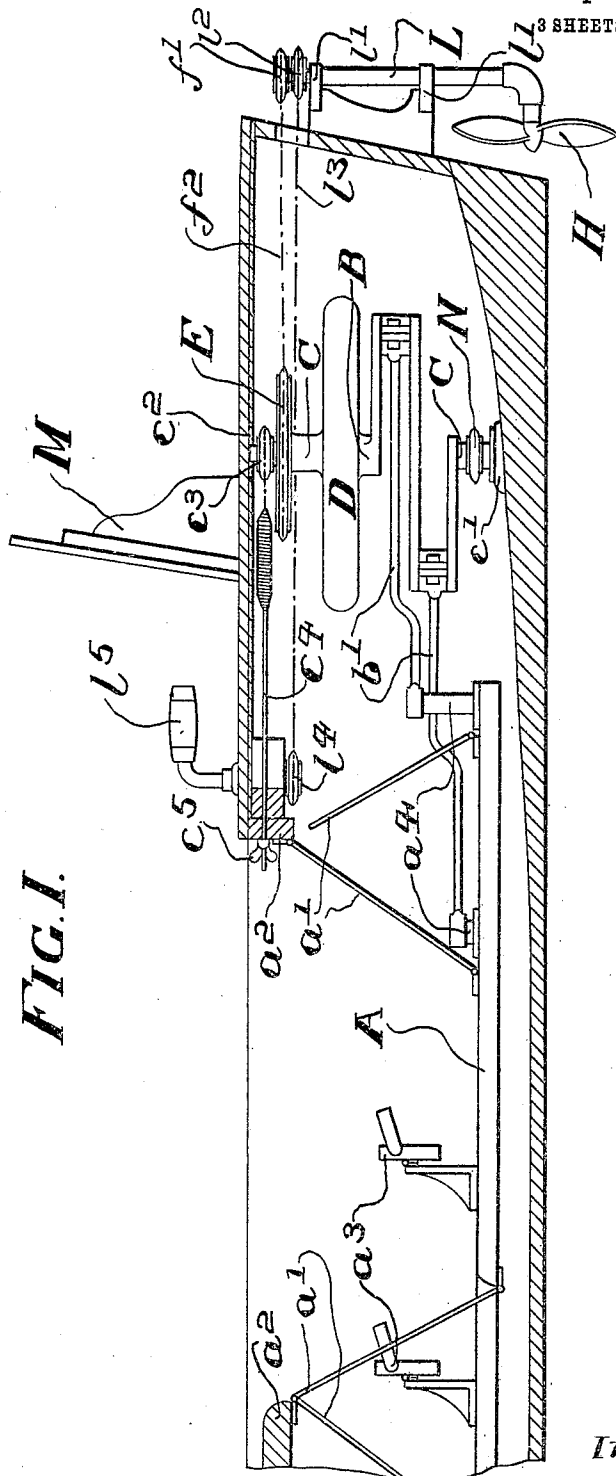


FIG. 1.

Witnesses.

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 Oliver Bateman.

Inventor.

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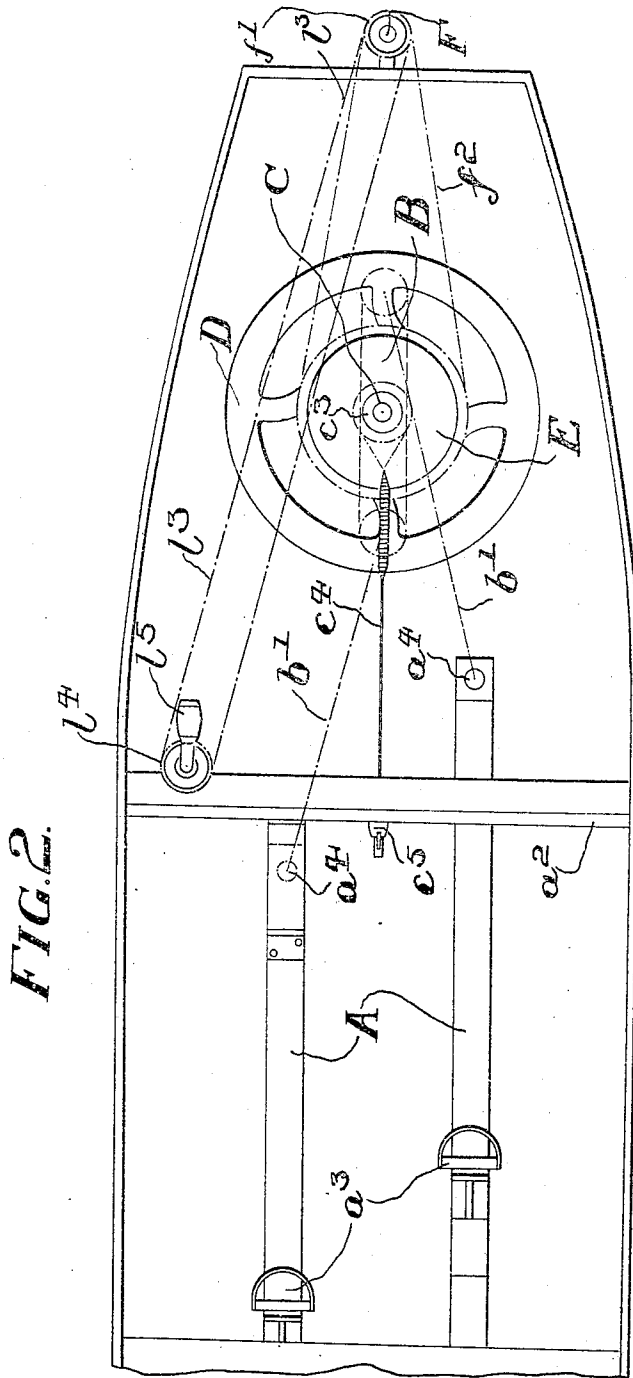


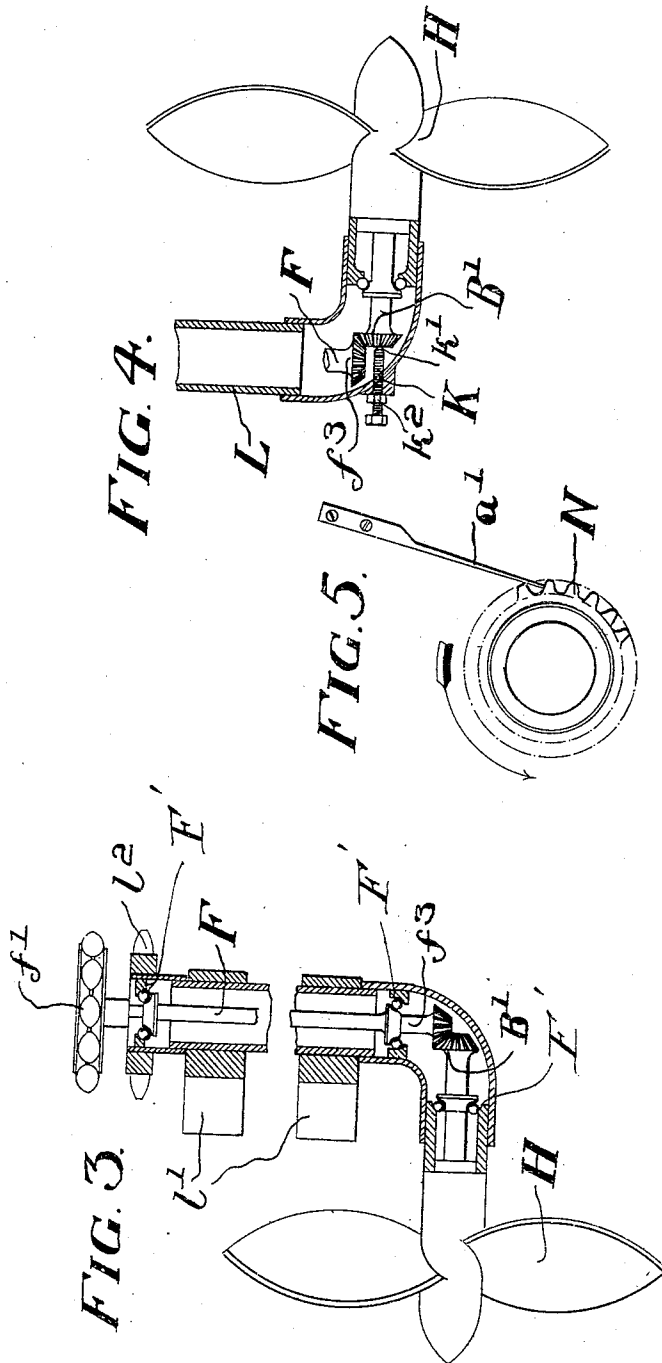
FIG. 2.

Witnesses.
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954,718.

Patented Apr. 12, 1910.
 3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

WILLIAM CUTLER, OF EDGBASTON, BIRMINGHAM, ENGLAND.

BOAT-PROPELLING MEANS.

954,718.

Specification of Letters Patent. Patented Apr. 12, 1910.

Application filed March 2, 1908. Serial No. 418,828.

To all whom it may concern:

Be it known that I, WILLIAM CUTLER, a subject of the Kingdom of Great Britain, and resident of 10 Wheeleys road, Edgbaston, Birmingham, in the county of Warwick, England, manufacturer, have invented certain new and useful Improvements in Boat-Propelling Means, for which I have applied for Letters Patent in Great Britain, Patent No. 17,748, dated the 3d day of August, 1907, and of which the following is a specification.

This invention relates to the mode of and means for manually propelling boats and steering, the object of the improvements being to enable one, two or more persons to propel the boat by means of the feet with a minimum amount of labor and in such a manner that the person or persons propelling are seated upon the ordinary seats such as used for rowing purposes thus retaining the same balance as the generality of rowing boats now in use, while at the same time the whole body of the boat except a small portion "aft" is free from any obstruction of mechanism. Special provision is also made in combination with such improved means of mechanical propulsion whereby the steering may be more conveniently effected and is at the same time more certain in action, the whole of the propelling and steering mechanism being so designed and arranged as to be perfectly silent in action. By these improved means no part of the mechanism requires to pass through the keel, part of the sides or end of the boat, thus enabling the whole arrangement to be readily fixed to both existing and new boats at a minimum cost.

Referring to the drawings:—Figure 1 is a part sectional elevation of a boat constructed in accordance with the present improvements. Fig. 2 is a part diagrammatic plan of the boat illustrated by Fig. 1, the cover part being removed to disclose the mechanism. Fig. 3 is an enlarged part sectional elevation illustrating the propeller mechanism. Fig. 4 is a section in which the working direction of the propeller is reversed. Fig. 5 illustrates the hereinafter described mechanism for indicating the direction of rotation of the propeller.

According to this invention a pair of longitudinal rods or members A are arranged along the center part of the bottom of the boat and are mounted or suspended by links

a' from the seat beams a^2 or other parts of the boat in such a manner as to be capable of a reciprocating movement. Pivoted or otherwise fixed upon such rods in the requisite position in front of the seat are shoe pieces a^3 to receive the feet of the operator, the whole being so arranged that the person operating can effect a contrary reciprocation of the rods to each other, the position of such shoe pieces being made readily adjustable upon the rods so as to enable the distance from the seat and their inclination and position to be adjusted to meet the various requirements to be met with.

The rear ends of the rods or members A are formed to or provided with vertical posts or pivots a^4 by which they are connected to a double crank B by means of connecting links b' the crank B being mounted upon a vertical shaft C upon which a fly-wheel D or weighted arm is fixed and which also carries a sprocket wheel E. The links b' are adapted to provide for the continued rotation of the shaft C by the reciprocation of the members A the crank B being dimensioned to the requisite movement thereof, but it is obvious that any suitable mechanism may be employed to convert the reciprocating action into a rotary motion. A vertical shaft F is mounted preferably outside the boat and provided at the top with a sprocket wheel f' of smaller diameter than the wheel E the sprockets f' and E being geared by a suitable chain f^2 in such a manner as to increase the revolution of the shaft F as may be desired. As it is found necessary for the proper working of the gearing to retain the chain or band at a regular and uniform tension, the bearings of the crank shaft C are so arranged to move in slots as to allow of the shaft and its gear wheel being controlled by a spring or springs in such a direction as to always retain the chain at the required tension. In the drawings the shaft C is shown as mounted in a foot-step bearing c' at the bottom and a longitudinal slot c^2 at the top and a free sprocket wheel or its equivalent c^3 is rotatably mounted at the upper extremity, and embraced by a chain by which the shaft is retained vertical in opposition to the pull of the chain f^2 by a spring stay c^4 tensionally adjustable by the nut c^5 .

A ratchet wheel N is loosely mounted on the shaft C, and this shaft and the ratchet wheel are provided with any ordinary

ratchet means, by which the ratchet wheel N will revolve with the shaft C as the latter turns in one direction, and be free to remain stationary as the shaft C turns in the other direction, this ratchet means being readily understood will not need to be illustrated or further described. Associated with the ratchet wheel N is a spring stop a' for the purpose of indicating the correct direction of rotation for the operation of the propeller. Thus when the shaft C is rotating in the correct direction as indicated by arrow in Fig. 5 the sprocket N remains stationary but on the shaft being rotated in the opposite direction the sprocket is carried around so that the sound of the accompanying click action of the stop a' will indicate the direction of rotation to the operator. With such means it is possible to reverse the propeller for the purpose of releasing weeds or other entanglement therefrom.

The propeller H is driven by the shaft F through bevel gearing $B^1 f^2$ the gear shafts being preferably mounted in ball bearings F' but in some cases the shaft F is of a flexible construction the lower part being curved or cranked to the horizontal and carrying the propeller H at its extremity. The propeller is preferably arranged intermediately to the boat end and shaft F by which disposition the water is dealt with prior to its contact with the shaft but in cases in which bevel gear is employed and the propeller extends in a rearward direction as illustrated by Fig. 4 an adjustable thrust bearing K may be employed to release the bevel wheels of the end thrust, such bearing preferably comprising a screw having a pointed extremity k' which projects into a seating or recess in the bevel wheel of the propeller shaft, the screw bearing being adapted to be locked at the desired adjustment by a lock nut k^2 .

The shaft F and propeller transmission mechanism are contained within a tube L the vertical part of which is mounted in bearings l' on the outside of the rear end of the boat, such tube having at its upper end a sprocket wheel l^2 which gears by a chain l^3 with a sprocket l^4 the shaft of which is carried up and provided with a crank handle l^5 preferably arranged at the side of the seat so as to be readily operated by the one hand of the operator and in connection with which a spring pawl and circular ratchet may be provided for the purpose of retaining the rudder in any required position when removing the hand. The endless chain l^3 is suitably adapted for adjustment and may be intermediately supported by carrier sprockets if necessary.

A seat back such as M may be detachably mounted upon the deck and connected for displacement in relation to the operating members.

The rods or members A may be arranged under the deck bottom of the boat, suitable slots being provided in the boarding for allowing of the reciprocating movement of the supports of the shoe pieces a^2 and in some cases they are mounted on rollers in lieu of being suspended as afore described.

By the operation of the handle l^5 the direction of action of the propeller may be varied in relation to the boat for the purpose of steering and by completely reversing the direction of action of the propeller the boat may be propelled in a reverse direction.

It will be readily understood that the invention is not restricted to the details of construction herein specified.

Having now described my invention, I declare that what I claim is:—

1. The hereinbefore described device comprising a propeller shaft, a propeller driven by the propeller shaft, a sleeve inclosing the propeller shaft and provided with bearings in which the propeller shaft is journaled, a crank shaft, a transmission means for imparting motion from the crank shaft to the propeller shaft, two reciprocatory members, means connecting the reciprocatory members with the crank shaft and means for turning the sleeve separate from the means provided for turning the propeller shaft.
2. The hereinbefore described device comprising a propeller shaft, a propeller driven by the propeller shaft, a sleeve inclosing the propeller shaft and provided with bearings in which the propeller shaft is journaled, a crank shaft adjustable in the direction of the propeller shaft, a sprocket wheel on the crank shaft, a sprocket wheel on the propeller shaft and a sprocket chain traveling around the sprocket wheels, an adjusting means for the crank shaft, two reciprocatory members, means connecting the reciprocatory members with the crank shaft, pedals for the reciprocatory members, a sprocket wheel on the sleeve, a sprocket wheel provided with a handle by which it can be manually operated, a sprocket chain traveling around the last mentioned sprocket wheels.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

WILLIAM CUTLER.

Witnesses:

WALTER H. E. BARTLAM,
ARTHUR H. BROWN.