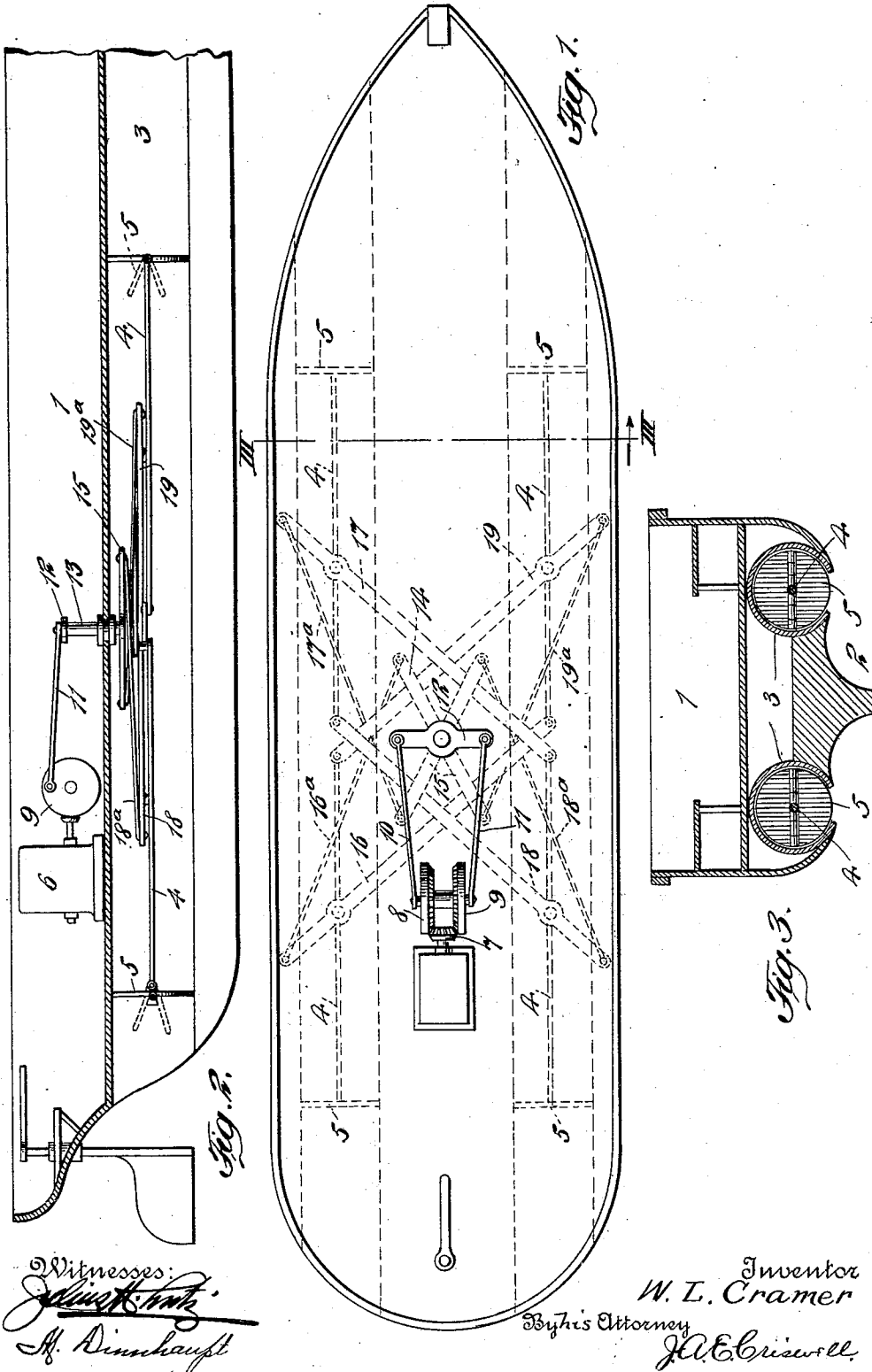


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BOAT PROPELLING MECHANISM.  
APPLICATION FILED JAN. 6, 1910

977,169.

Patented Nov. 29, 1910.



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# UNITED STATES PATENT OFFICE.

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## BOAT-PROPELLING MECHANISM.

977,169.

Specification of Letters Patent.

Patented Nov. 29, 1910.

Application filed January 6, 1910. Serial No. 536,661.

*To all whom it may concern:*

Be it known that I, WILLIAM L. CRAMER, a citizen of the United States, and a resident of Sheepshead Bay, borough of Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Boat-Propelling Mechanism, of which the following is a full, clear, and exact description.

10 This invention relates to a mechanism for propelling boats and the particular object of said invention is to provide a device of this character which will be simple in construction and at the same time so arranged as to produce an operating mechanism that will give the highest efficiency in speed in proportion to the power supplied.

15 The primary object of said invention is to construct a propelling mechanism that will do away with the screw propeller and wheel propellers now in use.

20 With these and other objects in view, the invention will be hereinafter more particularly described with reference to the accompanying drawings, which form a part of this specification, and will then be pointed out in the claims at the end of the description.

25 Figure 1 is an elevation partly in section. Fig. 2 is a top plan view; and Fig. 3 is a section on the line III—III.

30 In the drawings, 1 designates the boat structure which is provided with the usual keel 2. Arranged on either side of said keel is a tubular casing 3. This tubular casing, which is open at either end, extends the entire length of the boat, said casing being also open at the bottom. Adapted to slide within said casing are the plungers or pistons 4, the end portions of which are provided with a hinged head 5 which is adapted to feather as the plunger is forced forward. The motor 6, which may be of any suitable character, is adapted to operate a pinion 7, said pinion 7 being in engagement with the gears 8 and 9. Connecting rods 10 and 11 connect said gear wheels 8 and 9 with a member 12. Said member 12 is mounted on a shaft 13 which passes through the bottom of the boat and is connected to a pair of crossed levers 14 and 15. The end portions of these levers 14 and 15 are provided with connecting rods which connect with levers adapted to operate the plungers 4. These levers, which are designated by the numerals

16, 17, 18 and 19, are so arranged that when the member 12 is partly rotated, the levers 14 and 15 which are secured together, are also partly rotated. As the connecting rod 10 moves forward, the lever 14 will be slightly turned to the right and this will draw the pivoted lever 16 forward by means of the connecting rod 16<sup>a</sup>. The same motion will be transmitted to the lever 19 by rod 19<sup>a</sup> which will force said lever backward. As the lever 15 moves to the right, the lever 17 will be forced forward and the lever 18 backward, and it will therefore be seen that as the member 12 is operated by the connecting rods 10 and 11, the set of plungers located in the tubular casings on one side of the boat, will move forward as the other set moves backward.

When the piston rods are on their forward stroke, the pivoted blades of said pistons will feather and offer no opposition to the water, but when said pistons are on their backward stroke, sufficient pull will be exerted to cause the boat to move forward. It will therefore be seen that a constant reciprocation of the two sets of piston members will form an effective driving mechanism for any type of water craft.

Each of the levers 16, 17, 18 and 19 are pivotally connected to two of the pistons, one connection being at the end portion of a piston on one side of the boat, and the other at the central portion of the piston on the opposite side of the boat, the forward piston on one side being connected with a rear piston on the other side. This arrangement assures a steady stroke of the pistons. As the members 14 and 15 move, they in turn by means of the rod connections force the end portion of each lever in one direction or the other, at the same time the other end of said lever, which is connected to the end portion of a piston arranged on the opposite side of the boat, forces said piston in the opposite direction.

The peculiar arrangement of levers will assure a constant and steady reciprocation of the plungers and suitable speed-changing gears may be introduced to regulate the speed at which the gears 8 and 9 travel. It will also be noticed that the various levers and connecting links are so positioned as to take up very little space, and the same can readily be reached for adjusting and repair.

Having thus described my invention, I

claim as new and desire to secure by Letters Patent:—

1. In a propelling mechanism, a boat, said boat having cylindrical channels formed upon either side of its keel at a point below the water line, pistons adapted to reciprocate within said channels, a power shaft passing through the central portion of said boat, a pair of crossed levers mounted upon said shaft, rods pivoted to said crossed levers, a lever pivoted to the end portion of each piston, said lever being pivoted at a point near its other end to the central portion of another piston.

2. In a propelling mechanism, a boat provided with channels formed upon either side of its keel at a point below the water line, pistons adapted to reciprocate within said channels, a shaft passing through the central portion of said boat, crossed levers secured to said shaft, links pivoted to said crossed levers, levers connected at one end to the end portion of a piston and at their other end to one of the said links, said levers being connected at a point near their ends to the central portion of a piston.

3. In a propelling mechanism, a boat having cylindrical channels formed upon either side of its keel, pistons adapted to reciprocate in said channels, a power shaft extend-

ing through the central portion of said boat, crossed levers adapted to rotate with said shaft, rods pivotally connected to said levers, a second set of levers pivotally connected to the ends of said rods, said levers being adapted to reciprocate said pistons.

4. In a propelling mechanism, a boat, cylindrical channels formed upon either side of the keel of said boat at a point below the water line, pistons adapted to reciprocate in said channels, levers connecting the central portion of one piston with the end portion of another piston.

5. In a propelling mechanism, a boat provided with cylindrical channels on either side of its keel and below the water line, a shaft passing through the central portion of said boat, a member secured to one end of said shaft, rods connecting said member with a driving mechanism, levers secured on the other end of said shaft, means for connecting said levers with a second set of levers, said second set of levers being adapted to reciprocate said pistons.

This specification signed and witnessed this 4th day of January A. D. 1910.

WILLIAM L. CRAMER.

Witnesses:

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